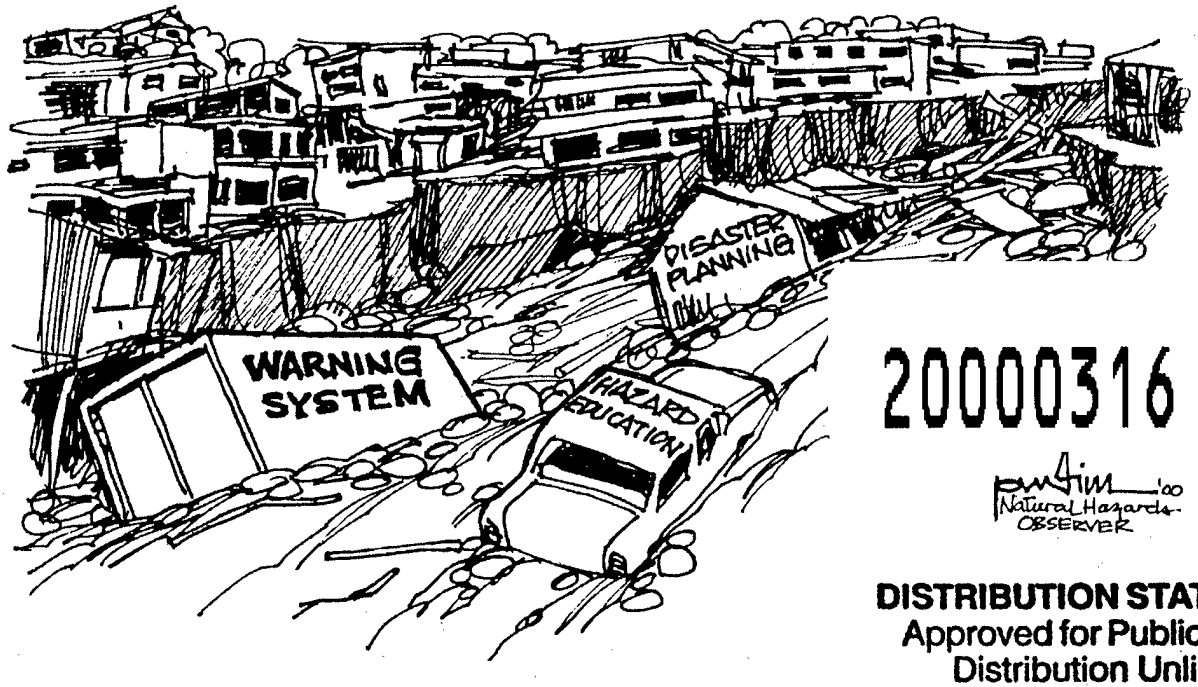
Natural Hazards Observer

VOLUME XXIV NUMBER 4 March 2000



Disaster in Venezuela

The Floods and Landslides of December 1999

—an invited comment

The Disaster in Venezuela

On December 15, 1999, several days of torrential rain in Venezuela triggered avalanches of mud, boulders, water, and trees that killed between 10,000 and 30,000 people, according to estimates from the Pan American Health Organization. The death toll has been difficult to determine because most victims were buried under mud or washed out to sea. The floods and landslides also destroyed around 26,000 homes and damaged another 100,000, causing the country's worst natural disaster in the 20th century.

Why So Many Dead?

Venezuela has no early warning system for extraordinary hydrometeorological events. Although many victims reported "rock noises" prior to the debris flows, few understood the threat because of their general lack of knowledge about the danger. Unlike other countries, Venezuela has no education programs provided by schools and civic associations that teach people about such things as flood, fire, and earthquakes. Thus, victims did not understand the threat, and there was no effective way to warn them. To make matters worse, most of the destructive flow occurred in the middle of the night.

During the 14 days prior to the disaster, rainfall measured eight times the normal amount for December. During the 48-hour period prior to the disaster, the region that was inundated received double the average yearly rainfall for all of Venezuela.

This unusual, intense rainfall saturated the soil and filled cracks and other voids faster than they could drain, causing increased pore pressure and hydrostatic pressure, which in turn opened and propagated cracks in the ground. Large debris dams were formed by floating buildings, cars, trees and boulders that became entangled. After pressure continued to build on these dams, they failed, releasing large volumes of water and debris after people thought the worst had passed. Venezuelan television broadcast images of

people cleaning mud from their homes minutes before they were inundated due to the collapse of an upstream debris dam that was hit by a wave front.

Dangerous Conditions

These colluvial mass movements had a very high potential for destruction. The soil contained boulders weighing up to 20 metric tons that hung from very steep (1:1) slopes in soft soils hundreds of meters above the present riverbed. Many of the victims were living in shantytowns that had sprung up in mountain ravines and beside rivers in the capital city of Caracas and in towns along the coast, 20 miles to the north. These areas were jammed by squatter shanties of poor quality construction. Trees several feet in diameter made this environment even more perilous by either interlocking with boulders to create one- to three-meter-high dikes (surprisingly similar to beaver dams) or falling into the groove of a previous colluvial slide the way a bobsled runs its course. In some cases, these "bobsleds" reached a critical speed, went out of track, and became flying missiles, destroying structures much like a torpedo launched against a wall.

Venezuela is a tropical country where weather phenomena can weaken the soil through several processes, making it softer near the surface. Entire neighborhoods in Caracas were ravaged by landslides on slopes that were stable when they were excavated 30 to 40 years ago, but were subsequently weathered to a point of low shear strength. The rains further weakened these slopes and induced sliding.

The Short Term

Venezuela has a long history of such floods (1740, 1780, 1797, 1938, 1944, 1951, 1972). In order to avoid another catastrophe, Venezuela must:

- Create an historical memory of such events, documenting the physical and social impacts of this disaster;
- Educate the public and government officials about the risks before the next disaster occurs;
- Analyze the human factors that generated vulnerability;
- Work to alleviate economic impacts and reduce the trauma to victims; and
- Implement monitoring and warning systems. Early warnings do exist for landslides, and they have been explained with pictures and cartoons, using plain language to educate residents.[1] However, it would be a mistake to rely only on warning systems. The primary goal should be prevention through balanced land-use planning, hazard reduction, and wise use of natural resources.

The Medium and Long Term

Part of the responsibility for failure in dealing with disasters, in Venezuela and throughout the world, belongs to political decision makers for ignoring constant warnings about risk. At the same time, the scientific community bears responsibility for not conveying vulnerability in a way that captures the interest and commitment of these decision makers. The two groups should work together to enact legislation that emphasizes vulnerability reduction. In order for decision makers to work from a firm theoretical base, sound scientific studies must be conducted to define the risk. Efforts must include creating a cartographic base, characterizing river basins, and conducting research on the social aspects of the region and the use of natural resources.

In Venezuela, a panel of experts has been appointed under the National Council of Housing to consolidate such information, conduct a meeting of high level government officials, and generate proposals for action. They have been advising the highest levels of Venezuelan government on its many activities related to the flood.

The Venezuelan government has already conducted an air photo survey, but the need still exists for hydrological, hydraulic, geological, and geotechnical studies of the most populated areas. From these studies, products such as contour maps must be created to aid research.

These actions will support further research into the economic impacts of various options regarding occupancy and land use in hazardous areas; the development of scenarios to aid decision making; consideration of the institutional aspects of such decisions, including legal, legislative, administrative, financial, and community impacts; and identification of possible policies and actions, such as planning for the sustainable development of our country, constructing stabilization and containment structures, and undertaking other mitigation activities.

Prevention of disasters must become a policy concern among the highest levels of Venezuelan government. Such efforts will require funding to sustain them, including assistance from the Inter-American Development Bank, the World Bank, and others. Otherwise, these events will continue to disrupt the social and economic fabric of Venezuela, and impede, if not reverse, national development.

Rodolfo T. Sancio, Secretary General
Rosalba Barrios, President
Venezuelan Geotechnical Society
Caracas, Venezuela

The authors gratefully acknowledge the assistance of Sergio Mora in the preparation of this article. For more information, contact *Rodolfo Sancio, Apartado 75987, Caracas 1070, Venezuela; tel: +(582) 986 1213; fax: +(582) 985 4481; e-mail: rsancio@telcel.net.ve or soc.vzlanadegeotecnia@usa.net.*

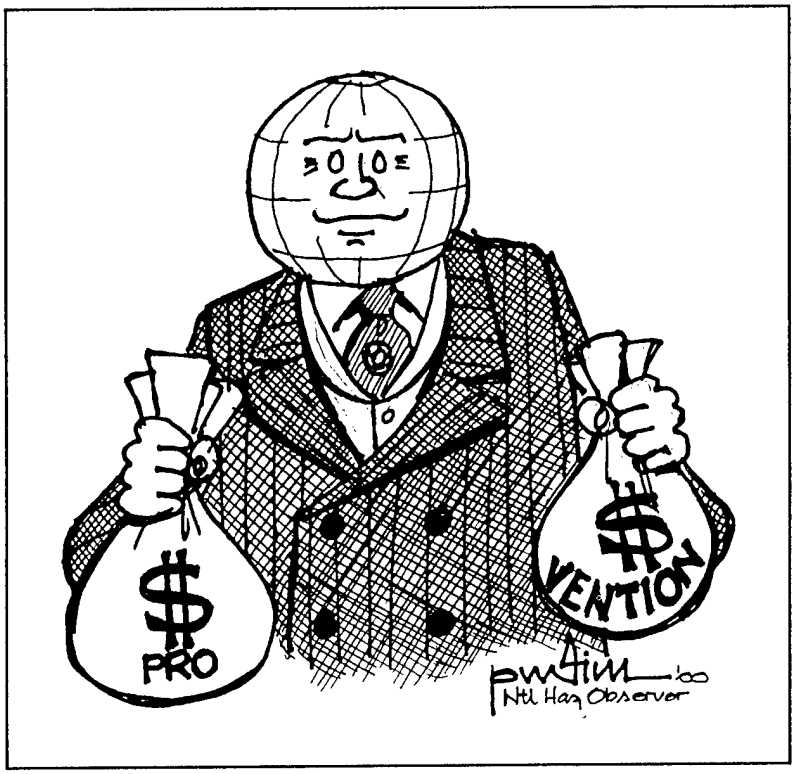
1. Salcedo, Daniel and Rodolfo Sancio. 1989. *Guia simplificada para identificacion y prevencion de problemas geotecnicos en desarrollos urbanos.* (Simplified Guide for Identification and Prevention of Geotechnical Problems in Urban Developments.) Caracas, Venezuela: Publicaciones LAGOVEN.

Photos of this disaster can be found at the Natural Hazards Center Web site: *http://www.colorado.edu/hazards/o/maro00.* For a report about the disaster in Spanish, see *http://ops-oms.org/ve/desastres.*

World Bank Launches ProVention Consortium to Mitigate Disasters in Developing Nations

In recent decades, devastation due to natural and technological disasters has increased enormously. The losses can be difficult for any economy to absorb, but the impacts on developing countries, which are disproportionately affected by disasters, are often crippling.

To confront this problem, the World Bank recently launched the ProVention Consortium, a global partnership of government agencies, international organizations, academic institutions, private businesses, private citizens, and other concerned groups, aimed at reducing disaster risk in developing countries by making disaster prevention and mitigation an integral part of development initiatives.



Developing countries bear, by far, the greatest losses due to natural disasters, while having minimal resources to respond effectively. The economic cost of natural disasters can be 20 times higher, as a proportion of gross domestic product, for developing countries than for industrialized nations, and that economic impact pales compared to the destruction of lives and institutions. Currently, 96% of deaths caused by natural disasters occur in developing countries. Moreover, between disasters, developing nations often lack state-of-the-art technical and scientific expertise to prevent or reduce future devastation.

The people and nations of the world have traditionally responded generously and aided poorer nations struck by disaster, but the World Bank has recognized that this same passion and unity must be harnessed to reduce these devastating losses before they occur. Thus, the ProVention Consortium's objectives are:

- To promote a culture of safety through education and training among leaders and citizens of developing countries;
- To support public policy that can reduce the risk of natural and technological disasters within developing countries;
- To support pilot projects and to disseminate information about "best practices" that have been proven to mitigate the scope and frequency of disasters;
- To develop governments' ability to minimize disasters and respond effectively when they occur;
- To forge links between public and private sectors, between the scientific community and policy makers, and between donors and victims, so that all stakeholders work together to strengthen the economy, reduce pain and suffering, and promote the common good.

The World Bank has recognized that disaster risk management is integral to social and economic development. Through the ProVention Consortium, it will help developing countries approach these problems with a new focus and new support.

More information about the ProVention Consortium is available from the World Bank Web site: *http://www.worldbank.org/html/fpd/urban/provention/index.html*. Interested persons can also contact *Alcira Kreimer or Margaret Arnold, Disaster Management Facility, World Bank, 1818 H Street, N.W., Washington, DC 20433; (202) 473-1378; fax: (202) 522-3224 or (202) 522-2125; e-mail: DMF@worldbank.org; WWW: http://www.worldbank.org/html/fpd/urban/dis_man/dis_man.htm.*

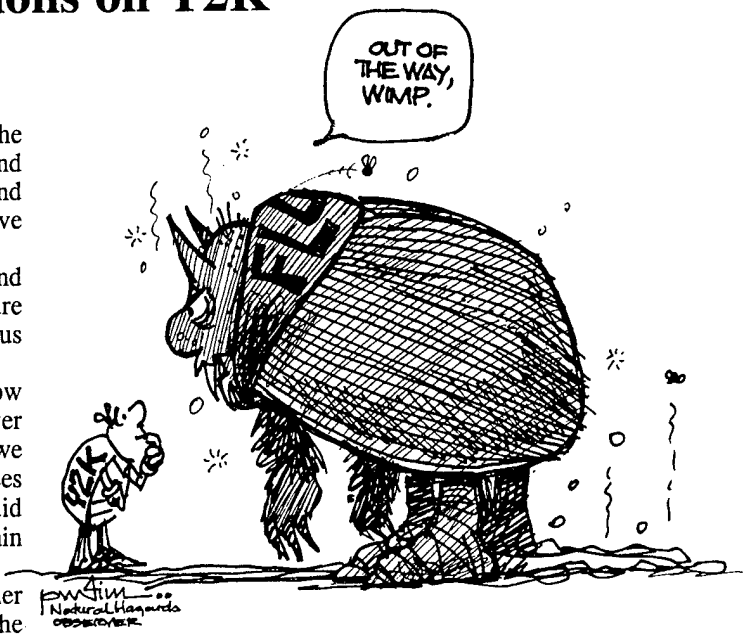
Reflections on Y2K

Y2K — Success, Failure, or Hype?

Following the rollover of the great millennial clock, the world seems to have breathed a collective sigh of relief and asked, first, "Wasn't that some shindig in Sydney?" and then (if it asked anything else at all), "How did we survive Y2K?"

Was the pervasive concern about computer glitches and consequent local, national, and world-wide system failure uncalled-for? Did our remediation efforts actually help us avoid disaster? Do future calamities still lurk?

Some pundits have suggested that we will never know the answers to these questions, and, indeed, we can never say exactly how the world would have turned out had we acted otherwise. However, by examining the consequences in some of the geographical and functional areas that did and did not undertake Y2K remediation, one can obtain some insight into what might have happened.



At midnight on December 31, in the U.S. and other countries that invested big bucks on Y2K, by and large the toilets flushed, the televisions stayed on, ATMs coughed up cash, furnaces and automobiles continued to belch CO_2, and life went on as usual. Even those countries that began their remedies a bit late reported limited problems (Italy, Russia and some of the other former Soviet Republics, some African and Middle Eastern countries, for example).

Because the problems that did occur on or shortly after midnight were not world-wide and/or did not involve widespread loss of basic infrastructure (e.g., electricity, phone, water), many people felt that Y2K problems had been avoided—if they ever existed in the first place.

In fact, however, quite a few problems seem to have occurred, but because of their limited scope, they received limited news coverage and were usually presented as happy anecdotes to remind us that Y2K had not been a catastrophe. Here are a few random samples from around the world:

- One of the more publicized snafus occurred in the U.S.—among those high-tech-loving military/security types, no less—when a program to remedy the Y2K problem in spy satellite communication went awry and rendered the satellite information unintelligible.
- The U.S. Department of Transportation (DOT) reported that 10 "mission critical" systems (out of 400) at the Federal Aviation Administration experienced problems, but the surveillance, contingency plans, and "work-arounds" prevented any jeopardy to public safety.
- Emergency phones along the Adirondack Northway were disabled for over a month because of a Y2K-related problem. (At the time this article was prepared, state police did not know when they would be repaired.)
- A video store customer in Albany, New York, was charged $91,250 because his videotape was 100 years late.
- When the German Opera issued its payroll for the first time this year, the program set the date to 1900 and wiped out government subsidies for the families of opera employees by wrongly computing children's ages. A person born in 1990 was calculated to be 90 years old, and the child allowance was automatically stopped.
- Telephone outages due to software failures were reported in the Australian states of New South Wales and Victoria.
- Computer controls on prison cell doors failed in British Columbia, Canada.
- In Turkey, an oil pipeline from Iraq experienced problems, and a computer date was switched back to 1995 to keep the oil flowing.
- Indeed, CMP Media (*http://www.techweb.com/y2ksurvey/results.html*) reported that, in a survey they conducted several days after the chronometric rollover, nearly 30% of IT professionals surveyed "indicate[d] their organizations suffered some Y2K-related problems since New Year's Eve. While most glitches were termed 'insignificant,' 16% caused brief service interruptions and 4% caused significant outages."[1]

Hundreds of other stories have proliferated across the Internet, and, although anecdotal, these reports suggest that had we not spent the billions of dollars to fix the Y2K problem, some major shoe polish *could* have hit the fan—and even some lives might have been lost. Those amusing anecdotes would have become one worldwide disaster.

On the other hand, did the risk warrant the years of anxiety it provoked? The steps needed to alleviate the risk seem to have been easily undertaken even late in the game; but then, were the efforts of Italy, Russia, etc. made easier because other countries paved the way?

The reports also underscore something we already knew—that complex integrated systems (those spy satellites, for example) are delicate things, and that when we fiddle with them, we must be very careful. Paradoxically, the reports may have also shown that, given the lack of worldwide problems, we may not be as globally interconnected as we thought—or, more likely, that we paid sufficient attention to global, "mission critical" systems to avoid such problems, while not paying sufficient attention to local and individual systems, where most problems occurred. Documenting the scope and cost of such problems is difficult. Indeed, since New Year's Day, Y2K has taken on the look of a "creeping" hazard—a measles outbreak rather than an magnitude 8 earthquake. Y2K is manifesting itself not as the apocalypse that many people feared, but rather as individual glitches, annoyances, failures, and other pains-in-the-CPU that pop up and will continue to pop up for months to come.

The Need to Study and Document

Unfortunately, all of the questions raised above remain unanswered, and conclusions about the Y2K problem and its remedies remain only conjecture. What's missing are detailed studies and comprehensive documentation of what was done and not done, what happened and what didn't, and some hard numbers comparing costs and benefits. In these pages a year and a half ago (see the ***Observer***, Vol. XIII, No. 2, p. 1), Richard Huggins correctly pointed out that the Y2K hazard promised "to be a research bonanza for the hazards community" and specifically identified strategic planning, community-based preparedness, business case studies, and Y2K predictions as areas that should be examined. Alas, we are aware of only one ongoing study by social scientists examining this unique and truly historical event from the perspective of hazards management.

If, at midnight on December 31, the world had descended into global malfunction, like some 1972 Chevy Vega whose engine had finally seized, no doubt academic researchers from virtually all disciplines would have scrambled to determine causes, effects, responses, and miscues. Unfortunately, nonevents tend to be nonstudied—even when the lessons available—what we did right, what we could do better—may be more important than those originating from an actual cataclysm.

The Preparedness Dividend

One of the benefits of disaster predictions (particularly those that include a specific time of occurrence, like the Y2K hazard and the Iben Browning earthquake "prediction" in 1990) is that they prompt the endangered population to prepare. As one of our friends stated, "A colleague who was a life-long California resident told me that she now has an earthquake preparedness kit for the first time—her recycled Y2K kit." Even if they later dumped their stored water and feasted on their stockpiled canned goods, families (and especially observant children) who took some advanced precautions learned something from the process. Indeed, smart public officials used the Y2K opportunity to educate the public about preparing for all types of disasters, but how long this level of preparedness will continue is unclear.

The preparedness dividend extends beyond the individual level. In preparing for Y2K, government at all levels, nonprofit organizations such as the American Red Cross, and businesses all had to examine both their intra- and interorganizational plans and systems for dealing with all sorts of problems. Groups who had never worked together before cooperated and planned together, and all organizations had to inventory and prioritize the systems at risk.

These clear benefits notwithstanding, additional significant research questions remain:

- What aspects of Y2K led people to take action? (Or if they did not take action, why not?)
- What are the long-term implications of the Y2K experience for disaster awareness and preparedness generally? and especially,
- What are the long-term implications for public policy concerning such preparedness?

A Lesson Regarding Other Hazards

For hazards managers and policy makers alike, the events of the last few years pose yet another question: We fixed the Y2K computer bug (or at least we exterminated a good portion of it); why not fix the Y2K flood or Y2K earthquake? The difference, of course, is that these latter risks carry with them enough temporal and spatial uncertainty that we go on with our lives while denying the threat. ("Sure it will happen," we say, "and I really ought to do something to get ready, but, well, I need to mow the lawn first . . .") One clear goal for researchers is to determine more effective ways to overcome such denial when predisaster mitigation is obviously warranted. In the absence of a relatively specific projection for time of onset (as is the case with earthquakes, versus Y2K or most hurricanes), how can people and institutions be motivated to prepare for disasters?

Y3K — Taking the Longer Perspective

If nothing else, the Y2K experience has underscored the need for all of us to assume wider perspectives—both geographical and temporal—in our work. As much as any other recent occurrence, the Y2K problem required those responding to consider global consequences because of the interconnectedness of the world's computer networks. At the same time, it pointed out how a lack of farsightedness on the part of computer programmers led to great worry and expense decades after those programmers programmed. In that regard, to ensure the health and safety of future generations, we must consider and take responsibility for the consequences of our present actions—be they programming a computer or developing a floodplain—in the decades, centuries, and even millennia to come.

The Editors

Our thanks to Rich Huggins and Janet Benini for their comments and additions to this article.

1. One list of Y2K computer glitches around the world is available from *Federal Computer Week*—available on-line at *http://www.fcw.com/microsites/y2k.asp*.

WASHINGTON UPDATE

FEMA Increases Coverage for Compliance Costs

Following a flood, homeowners filing a flood insurance claim are often surprised to learn that they will only be provided funds to replace or repair their home, not to elevate, relocate, or implement other floodproofing measures. In 1997, the Federal Emergency Management Agency's (FEMA's) National Flood Insurance Program (NFIP) initiated a new policy called Increased Cost of Compliance (ICC), through which, for an additional premium of up to $75, property owners who purchase or renew their flood insurance policies after June 1, 1997, will receive $15,000 additional coverage for the "consequential loss brought on by a floodplain management ordinance or law affecting repair and reconstruction involving elevation, floodproofing, relocation, or demolition (or any combination thereof) of a structure, after a direct loss" caused by a flood. No separate deductible applies. The NFIP announced in the December 16 ***Federal Register*** (Vol. 64, No. 241; pp. 70191-70193) that it is increasing the amount of coverage to $20,000, citing new information that indicates a decrease in annual claims, thus allowing an increase in coverage with no change in premium.

Buildings eligible for this coverage are structures that have suffered repetitive loss, that is, those that have incurred flood damage at least twice over 10 years and for which the cost of repair exceeded 25% of the market value of the structure at the time of the flood. Also, any structure that experiences flood damage for which repairs are equal to or exceed 50% of market value are eligible. In both cases, the state or local government must have a cumulative, substantial damage provision or repetitive loss provision in its floodplain management law or ordinance.

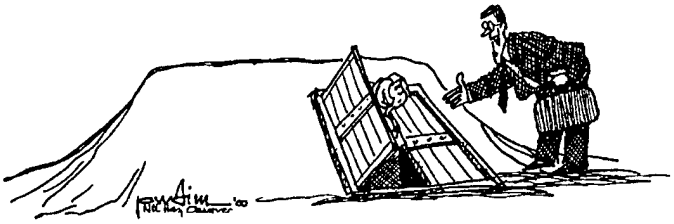
The Increased Cost of Compliance (ICC) was mandated by the National Flood Insurance Reform Act of 1994. Insurance awards must be used within two years of damage to a structure. The payments program covers the activities mentioned above, as well as the cost of bringing a structure into compliance with state and local floodplain management laws, even if the structure has received a variance from floodplain management restrictions prior to the flood loss.

For more information on this coverage, contact *Charles M. Plaxico, Jr., FEMA, FIA, 500 C Street, S.W., Washington, DC; (202) 646-3422; fax: (202) 646-4327; e-mail: charles.plaxico@fema.gov.*

HUD to Insure Windstorm Shelters

On January 14, 2000, Secretary Andrew Cuomo announced that the U.S. Department of Housing and Urban Development (HUD) will provide mortgage insurance to homebuyers who borrow up to $5,000 to create windstorm shelters in their homes. These structures, also called safe rooms, can provide protection against winds of up to 250 miles per hour and against projectiles traveling up to 100 miles per hour. Designs for the shelters must follow guidelines developed by FEMA in cooperation with the Wind Research Center of Texas Tech University. They must also be consistent with HUD's National Performance Criteria for Tornado Shelters.

The mortgage insurance will be provided by HUD's Federal Housing Administration (FHA), the agency that insures loans made by private lenders to homebuyers. FHA insurance guarantees that a timely payment of principal and interest will be made to a lender in the event of a default by a homebuyer. This initiative is part of a joint federal and private-sector effort called the Partnership for Advancing Technology in Housing, which is working with FEMA to develop and implement advanced home technology, such as the safe room design. The safe room project is also a FEMA Project Impact initiative.



For more information on the availability of mortgage insurance for safe rooms, contact *your local HUD office* or view HUD's Disaster Recovery Web page: *http://www.hud.gov/disarelf.html.* The free plans for building a safe room can be ordered by calling *(800) 480-2520.* Ask for document FEMA 320a. The book ***Taking Shelter from the Storm: Building a Safe Room Inside Your House*** (which includes the plans) is free and can be ordered by calling *(888) 565-3896*; it can also be viewed on-line at*http://www.fema.gov/mit/shplans.*

FEMA Gives $$$ for Unmet State Needs

Thanks to a recent appropriation from Congress, the Federal Emergency Management Agency (FEMA) is once again able to provide money to states to "address disaster-related needs not met by Federal disaster relief programs" (see the ***Observer***, Vol. XXIV, No. 1, p. 11). This recent allocation (following one in August) of nearly $40 million is for 15 states that have suffered presidentially declared

disasters in federal fiscal year 1999. The funds are to be distributed by states to communities affected by those disasters, and the grants require at least a 25% contribution from recipients. States receiving funding include Alabama, Arkansas, California, Colorado, Georgia, Iowa, Kansas, Louisiana, Maine, Mississippi, Missouri, Oklahoma, Tennessee, Texas, and Wyoming.

Under the terms of the appropriating legislation, communities must use the money for activities for which there are no available funds from FEMA, the Small Business Administration, or the U.S. Army Corps of Engineers. The funds can only be used for mitigation, buyout assistance, disaster relief, and long-term recovery. In addition, states must ensure that mitigation and buy-out activities are cost effective and that uses of acquired property will be restricted.

Further information about this distribution of funds can be obtained from *Robert F. Shea, Jr., Program Support Division, Mitigation Directorate, FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-4621; fax: (202) 646-3104; e-mail: robert.shea@fema.gov.*

HUD Gives $$$ for Unmet State Needs

Joining FEMA in its generosity, the Department of Housing and Urban Development (HUD) is making $20 million available to states for unmet needs due to disasters through its Disaster Recovery Initiative, funded through the 1999 Supplemental Appropriations Act. "Unmet needs" will be identified by the director of FEMA as "those which have not or will not be addressed by other Federal disaster assistance programs." HUD has allocated 40% of the funds for housing, 20% for business recovery, 20% for mitigation, and 20% for public works facilities.

The legislation requires that each state administer the Disaster Recovery Initiative funds "in conjunction with its Federal Emergency Management Agency program or its community development block grants program." It requires matching funds equal to 25% of total expenses. Like the FEMA disbursement, recipients may not use these funds for activities that are already funded by FEMA, the Small Business Administration, or the U.S. Army Corps of Engineers.

A detailed description of the HUD Disaster Recovery Initiative and funding requirements can be found in the ***Federal Register***, Vol. 64, No. 248, pp. 72852-72866. A notice of waivers, modifications, and requirements for Community Development Block Grant funds can be found in the same issue on pages 72872-72874. For further information about the Disaster Recovery Initiative, contact *Jan C. Opper, Office of Block Grant Assistance, HUD, Room 7286, 451 Seventh Street, S.W., Washington, DC 20410; (202) 708-3587; fax: (202) 401-2044.*

Project Impact Expands: New Partnerships with JCSC and DOE

JCSC

On December 13, during the Second Annual Project Impact Summit in Washington, D.C., FEMA's Project Impact and the Joint Center for Sustainable Communities (JCSC—an alliance between the National Association of Counties and the U.S. Conference of Mayors) signed a national partnership agreement. The alliance provides yet another means for local governments to implement Project Impact in their communities. Project Impact is FEMA's nationwide initiative to promote local, sustainable mitigation as a way to lessen the toll of disasters.

Under the partnership, the JCSC will create opportunities for Project Impact officials to participate in national and regional events and interact with mayors and county officials. The agreement will allow the JCSC to use Project Impact tools and products and share them with local government officials nationwide. JCSC will encourage county officials and mayors to participate in Project Impact's training courses to learn methods to prevent or lessen the devastation brought on by disasters.

The JCSC works to promote sustainable communities that incorporate economic development, environmental stewardship, and social well-being through county/city collaborations and by helping counties find local solutions to local problems. In addition, JCSC also provides technical assistance, sponsors workshops at regional and national conferences, and maintains an information clearinghouse of strategies that promote sustainable communities.

DOE

FEMA and the Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy (EERE) also announced a new partnership at the Project Impact Summit. The interagency agreement is designed to promote the use of environmentally friendly information, expertise, and practices among Project Impact communities as part of their fight against disasters.

Through the agreement, EERE will work with FEMA to spread the idea of sustainable redevelopment, which helps disaster-prone areas not only become safer and disaster resistant, but also stronger and healthier from an environmental and economic standpoint. EERE representatives will participate in Project Impact meetings, seminars, work-

shops, and conferences and collaborate with FEMA to incorporate sustainable redevelopment programs into Project Impact communities.

FEMA and EERE will work together on, among other activities: the Million Solar Roofs program, which will help communities incorporate prevention into daily planning decisions; the Weatherization Assistance program, which will improve the energy efficiency of homes occupied by low-income residents; and the Rebuild America program, which helps to build partnerships and develop action plans for smart choices in commercial development and multifamily and public housing.

For more information on these two new partnerships, see the FEMA Project Impact Web site: *http://www.fema.gov/impact*.

FEMA Adjusts Grant Amounts

FEMA has increased the amount of money available for Individual and Family Grants, grants to state and local governments, and grants to private nonprofit facilities for disasters declared on or after October 1, 1999, by 2.3% over the prior year. As of that date, the maximum amount of any grant made to an individual or family for disaster-related needs and expenses is increased to $13,900. States, local governments, and owners of private nonprofit facilities are eligible to receive up to $48,900. For more information, contact *Madge Dale, FEMA, Response and Recovery Directorate, 500 C Street, S.W., Washington, DC 20472; (202) 646-3772.*

Congress Authorizes Monument to Civil Defense and Emergency Management

On November 13, 1999, President Clinton signed Public Law 106-13, which authorizes the United States National Civil Defense Monument Commission to construct a monument "to honor those who have served the Nation's civil defense and emergency management programs."

The monument is to be constructed on Federal Emergency Management Agency land in Emmitsburg, Maryland, and is subject to the approval of the agency director. The monument is to be paid for through contributions to the commission, which is nonprofit.

Copies of Public Law 106-13 can be found at any *federal repository library* or on-line at *http://thomas.loc.gov*.

Seeking Feedback . . .

National Academies Issue Report on Information Technology Research for Crisis Management

The Computer Science and Telecommunications Board (CSTB) of the National Research Council (the operating arm of the National Academies of Science and Engineering and the Institute of Medicine) has recently released a report, ***Information Technology Research for Crisis Management*** (1999, 104 pp.), sponsored by the National Science Foundation and NASA. The report is one element of a CSTB study of how research and development could improve the use of information technology in government.

CSTB convened a series of workshops that brought together stakeholders from several government domains, including crisis management, and researchers in computing and communications systems. The first of these workshops, "Research in Information Technology to Support Crisis Management," was held December 1-2, 1998, in Washington, D.C., and is summarized in the recently released report. Interested persons can view or order copies of the report by following links from *http://www.cstb.org*.

Building on CSTB's earlier study, ***Computing and Communications in the Extreme*** (National Academy Press, 1996), the workshop focused specifically on how to move forward from current technology and examined possible research to address the information needs of crisis managers. It also provided an opportunity for various potential contributors to learn how they might collaborate in improving systems to support crisis management in the long term.

In their upcoming final report, the study committee will synthesize the workshop experience into a more general, broad set of findings and recommendations for information technology research to support government. This second phase of the project will draw on the workshops organized by the committee, as well as additional briefings and other work, to develop a final report that will present findings and provide recommendations for refining NSF's "Digital Government" program. Comments and suggestions based on the workshop report will help the committee develop the final report. Observations can be addressed to the study director, *Jon Eisenberg, CSTB, 2101 Constitution Avenue, N.W., Washington, DC 20418; e-mail: jeisenbe@nas.edu.*

Information Technology Research for Crisis Management can be ordered for $25.25 ($20.20, on-line) from the *National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20055; (800) 624-6242 or (202) 334-3313; fax: (202) 334-2451; WWW: http://www.nap.edu/catalog/9734.html*. International prices, as well as an on-line version of the book, are also available from that Web address.

Decade for Natural Disaster Reduction

The Decade Lives On . . .

On November 24, the Second Committee of the General Assembly of the United Nations adopted Resolution A/C.2/54/L.44, which endorses proposals made by the Secretary General for implementing institutions, programs, and other arrangements to succeed the International Decade for Natural Disaster Reduction (IDNDR). The proposals promote a global, interdisciplinary approach to disaster management—to be known as the International Strategy for Disaster Reduction (ISDR)—that recognizes the interrelationship of social and physical factors in producing disasters. The resolution also calls on the international community to provide the necessary financial support to effect international action. The primary objectives of the strategy are to help communities become more resilient to hazard events and to promote risk prevention strategies as part of sustainable development.

The resolution calls for the composition of an interagency task force and the establishment of a small secretariat to succeed the IDNDR office in Geneva, and, as of January 2000, the IDNDR Secretariat was replaced by the *ISDR Secretariat, OCHA, United Nations, Palais Wilson, 51, Rue des Paquis, CH -1201 Geneva, Switzerland; tel: (41-22) 917-9000; fax: (41-22) 917-9098 or 917-9099; e-mail: isdr@un.org.*

More information about the resolution is available from the United Nations Web site at *http://www.un.org/Depts/dhl/resguide/r54c2.htm.*

So Does RADIUS . . .

The recent earthquakes in Turkey, Greece, and Taiwan have highlighted the need for long-term preventive actions to ensure that cities are earthquake resilient. Since we cannot prevent earthquakes, we must act to mitigate their worst consequences. One of the major initiatives of the IDNDR addressed this issue. The RADIUS (Risk Assessment Tools for Diagnosis of Urban Areas Against Seismic Disaster) Project, launched in April 1998 by the IDNDR Secretariat, was an 18-month program carried out with the technical assistance of three international institutions—OYO Corporation (Japan), GeoHazards International (USA), and the Bureau de Récherches Géologiques et Minières (France)—with funding from the government of Japan. A recent evaluation of the project concluded that RADIUS had achieved its four main objectives:

- It has developed earthquake damage scenarios and action plans for nine case study cities (selected worldwide from 58 applicants): Addis Ababa, Ethiopia; Antofagasta, Chile; Bandung, Indonesia; Guayaquil, Ecuador; Izmir, Turkey; Skopje, TFYR Macedonia; Tashkent, Uzbekistan; Tijuana, Mexico; and Zigong, China.
- It has produced practical tools for the estimation and management of urban seismic risk.
- It has considerably raised public awareness of seismic risk.
- It has promoted information exchange concerning seismic risk mitigation at the city level. Over 100 cities worldwide became member cities and associate cities in the initiative and participated in its information sharing network.

Risk management actions recommended through the project are already being implemented in several locations and promulgated to other cities in seismically active areas.

This IDNDR activity has also produced a comparative study on understanding urban seismic risk around the world. This project involved 74 cities worldwide in an effort to better understand the causes of their earthquake risk. Again, risk management information and experiences were shared among participants. Additionally, the RADIUS project has resulted in guidelines for future RADIUS-type projects and a computer-based manual for preliminary earthquake damage assessment. These tools will help local governments to determine priorities and improve the management of their seismic risk.

A final report from the RADIUS project, including the developed tools, is currently being prepared. It will become available later this year and be distributed via the Internet. In the meantime, more information about the project, including a ***RADIUS Outline Brochure*** and a final ***RADIUS Outcome Brochure*** are available from *http://www.idndr.org.* Additional background information is available from *http://www.geohaz.org/radius.* Interested persons can also contact *Etzuko Tsunozaki, ISDR Secretariat, OCHA, United Nations, Palais Wilson, 51, Rue des Paquis, CH-1201 Geneva, Switzerland; tel: (41-22) 917-9714 or 9719; fax: (41-22) 917-9098 or 917-9099; e-mail: tsunozaki@un.org.*

The Internet Pages

Below are a few of the more useful disaster Internet resources we've discovered recently. For a comprehensive list of selected sites dealing with hazards and disasters, see *http://www.colorado.edu/hazards/sites/sites.html.*

All Hazards

http://www.fema.gov/disasters

On its Web site, the Federal Emergency Management Agency (FEMA) has posted a map of the United States that lists federally declared disasters for each state in 1999. The site links to descriptions of FEMA response and other information about these disasters.

http://www.cbo/gov/
http://www.cbo.gov/byclasscat.cfm?class=0&cat=7

At this address, the Congressional Budget Office (CBO) has published two reports, entitled ***Emergency Spending Under the Budget Enforcement Act*** and ***Emergency Spending Under the Budget Enforcement Act: An Update***, which provide useful data on federal expenditures for natural disasters.

http://www.ci.fort-collins.co.us/c_safety/oem/index.htm
http://www.ci.fort-collins.co.us/c_safety/oem/ndic.htm

The city of Fort Collins, Colorado, a FEMA Project Impact demonstration community, has a model Office of Emergency Management Web site that includes breaking news; a calendar of events; individual pages and brochures on severe thunderstorms, lightning, hail, tornadoes, flooding, and the many other hazards that threaten the community; photos and other information about the 1997 flash floods that inundated Fort Collins; sections on emergency preparedness, family disaster planning, and the preparation of an emergency supplies kit; a description of the city's Project Impact initiative; and much other information. Of particular note is a recently released "Natural Disaster Information Cards (NDIC) System for 911 Dispatchers." The system, provided in downloadable PDF format, is intended to be used for in-service training of 911 dispatchers, as refresher information when an event is anticipated, and as guidance for use during a disaster.

New Quick Response Reports and an Annual Report from the Natural Hazards Center

As regular readers of the ***Observer*** know, the Natural Hazards Center sponsors "Quick Response" studies of immediate postdisaster impacts and response. Upon completing their work, quick response researchers submit brief reports to the center, which publishes them immediately via the World Wide Web. The latest reports include:

- QR123: ***"There's a Big Wind a Comin'": A Profile of Survival and the Culture of Response after Hurricane Mitch on Isla Guanaja, Honduras***, by Gerald Krausse and Christopher L. Dyer — *http://www.colorado/edu/hazards/qr/qr123/qr123.html.*
- QR124: ***Field Evaluation of Hurricane Damage to the Water Resources, Tourism Infrastructure, and Emergency Response of San Salvador Island, Bahamas***, by Douglas W. Gamble — *http://www.colorado/edu/hazards/qr/qr124/qr124.html.*

The complete list of quick response reports is available at *http://www.colorado.edu/hazards/qr/qr.html.* In addition, printed copies can be purchased for $5.00 each, plus shipping charges ($3.00 for the U.S., Canada, and Mexico; $4.00 for international surface mail; and $5.00 for international air printed matter). Orders should be directed to the *Publications Clerk, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-6819; fax: (303) 492-2151; e-mail: janet.kroeckel@spot.colorado.edu.*

Besides sponsoring quick response research, the Natural Hazards Center is involved in a multitude of other programs and projects to bring information about hazards and hazards management to the people who want to understand and mitigate these risks. If you would like to know exactly what the center is up to and what it has available, consult the annual report recently added to the center's Web site: *http://www.colorado/edu/hazards/annrpt/99annrpt.html.*

http://www.unesco.org/culture/heritage-risk/index.html

This United Nations Educational, Scientific, and Cultural Organization (UNESCO) Web site on "Cultural Heritage at Risk" has been updated recently with information derived from the International Congress on Cultural Heritage at Risk held in September 1999. The site is intended to be a source of information on this topic, as well as a "discussion platform" wherein specialists and professionals can exchange views on various aspects of preserving and protecting cultural heritage. The site developers also hope to create a list of specialists in this field and affiliated professions who can be consulted in times of need. For more information, or to contribute to the site, contact *Hideo Noguchi, UNESCO, Division of Cultural Heritage, 1, rue Miollis, 75015 Paris, France; tel: 0033-1.45.68.44.18; fax: 0033-1.45.68.55.96; e-mail: h.noguchi@unesco.org.*

http://www.bghrc.com

Founded in 1997 the Benfield Greig Hazard Research Centre at University College London has become the largest multidisciplinary academic hazard research center in Europe. It now incorporates over 40 staff, associates, and affiliates in numerous projects ranging from long-term seasonal prediction of hurricanes and other severe storms to landslide and volcano hazard mitigation. With this impressive growth, the center has revamped its Web site, which now includes descriptions and results of many of the organization's projects (including the long-range forecasts mentioned above), as well as a comprehensive publications list, a photo gallery, an entire section dedicated to the center's Disaster Management Unit, and other information about the center, its staff, and programs.

http://www.egs.uct.ac.za/dimp

The Disaster Mitigation for Sustainable Livelihoods Programme (DiMP) at the Department of Environmental and Geographical Sciences, University of Cape Town, South Africa, promotes the integration of disaster mitigation with development programs, particularly those targeted at economically vulnerable communities. DiMP carries out its mission in three principal areas: collaborative research, policy advocacy, and education and training.

In 1997, the Overseas Development Administration of the British government funded DiMP to establish a regional network of organizations committed to strengthening disaster mitigation research, training, education, and practice. This work resulted in the creation of "Periperi" (Partners Enhancing Resilience for People Exposed to Risks)—a network of organizations and institutions in southern Africa that work together across disciplines and national borders. The Southern African Risk Reduction Network is now supported by the Office of Foreign Disaster Assistance, United States Agency for International Development (OFDA/USAID) and the Department for International Development of the British government.

The new DiMP Web site provides a description, background information, and details about current interests of the program; more information about Periperi; a list of DiMP publications; and links to related regional and international organizations. For additional information about DiMP, contact the *Disaster Mitigation for Sustainable Livelihoods Programme, Department of Environmental and Geographical Sciences, University of Cape Town, Rondebosch 7701, South Africa; tel: 27 (0)21 650-2987, 27 (0)21 650-4115, or 27 (0)21 650-4116; fax: 27 (0)21 689-1217; e-mail: nomdo@enviro.uct.ac.za.*

http://isis.uwimona.edu.jm/index.html

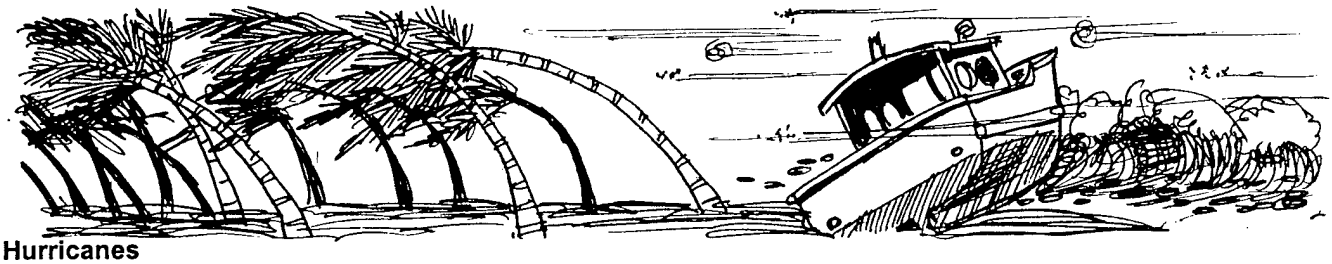
The new Web site of the Unit for Disaster Studies, Department of Geography and Geology, University of the West Indies, offers scientific information, data, and references to promote better understanding of natural hazards in the Caribbean. The site has sections entitled Natural Hazards and Disasters (showing the various hazards to which the islands of the region are vulnerable), Caribbean Geology, Jamaica, Other Islands, Organizations, Bibliography, Maps, Announcements, Miscellaneous, and News.

http://www.redcross.org/disaster/masters

The American Red Cross has undertaken a project to assemble "Masters of Disaster" curriculum components to help teachers integrate disaster safety into their regular lesson plans. For example, if a teacher needs to teach how to plot latitude and longitude on a map, he or she can offer a lesson on how to track a hurricane. Information about this new resource is available from the Web site above.

The Masters of Disaster materials are being designed to be flexible, so that teaching teams can integrate hazard-related lessons into the core academic subjects of science, math, social studies, and language arts (including reading, word comprehension, and spelling). Hazard and safety content will be available for teachers to supplement their lessons. The curriculum components will include a teacher's guide for lower elementary (K-2), upper elementary (3-5), and middle school (6-8), as well as numerous other teaching materials. The topics covered will include general disaster safety (such as family disaster planning, maintaining disaster supplies, and conducting a home "hazard hunt"), earthquakes, hurricanes, tornadoes, floods, and lightning.

Masters of Disaster is in the final stages of development, and the Red Cross anticipates releasing it in the summer of 2000. Interested persons should check the Web site above for details about availability and ordering. The site also includes a form for submitting or requesting information about the Masters of Disaster curriculum aids.



Hurricanes

http://www.tallytown.com/redcross

The Florida Capital Area Chapter of the American Red Cross and the Leon County, Florida, Sheriff's Office Division of Emergency Management have published a brochure entitled "Tis the Season," to instruct residents of mobile/manufactured homes how to prepare for the high winds of a hurricane. This brochure is available from the Capital Area Chapter's Web site above in PDF format and can be easily downloaded and printed.

Floods

http://www.floods.org

The Web site of the Association of State Floodplain Managers (ASFPM) now includes ***Mitigation Success Stories in the United States*** (see the ***Observer***, Vol. XXIV, No. 1, p. 5), the purpose of which is twofold: to showcase real-world examples of natural hazard mitigation and to publicize the benefits of mitigation across the country. The examples are intended to serve as models that provide decision makers with information about how to formulate hazard reduction programs in their communities.

http://www.cira.colostate.edu/fflab/stuart/website/welcome.htm

Because flash floods are a pervasive risk along the foothills of northern Colorado, Colorado State University, located in Fort Collins, hosts a Flash Flood Laboratory (see the ***Observer***, Vol. XXII, No. 3, p. 14). The lab's Web site describes the mission and current projects of the institution, provides recent news (it currently offers information about the recent flooding in Venezuela) and a list of recent flash floods, offers information on how to prepare for and survive a flash flood, links to other flash-flood-related sites, and presents more information and research concerning the 1997 flash flood that struck Fort Collins—including disaster recovery lessons learned by the university, whose library and several other facilities were severely damaged. For more information about the laboratory, contact the *Flash Flood Laboratory, Cooperative Institute for Research in the Atmosphere, Colorado State University, Foothills Campus, Fort Collins, CO 80523-1375; (970) 491-8448; e-mail: flashflood@cira.colostate.edu.*

Other Severe Weather

http://www.ncdc.noaa.gov/extremes.html

The National Climatic Data Center offers this page on "Extreme Weather and Climate Events," which, the NCDC tells us, has become the most popular segment of the center's Web site. These pages cover U.S. hurricanes, heavy rainfall, temperature extremes, tornadoes, 1991-1999 weather events, historical global extremes, satellite images, U.S. radar composites, climatic data, local U.S. storm reports, climate characteristics of 1999, El Niño/La Niña, global climate change, and billion dollar weather disasters.

Earthquakes

http://www.eeri.org

The Web site of the Earthquake Engineering Research Institute (EERI) provides information on both recent seismic events and seismic-resistant construction and hazard mitigation generally. The site recently added a special report, ***The Chi-Chi, Taiwan Earthquake of September 21, 1999***, including a paper by James D. Goltz entitled "The '921' Chi-Chi, Taiwan Earthquake of September 21, 1999: Societal Impacts and Emergency Response." The site also offers ***Research Needs Emerging from Recent Earthquakes***—recommendations from a workshop organized by EERI for the National Science Foundation to explore needs emerging from the Turkey, Greece, and Taiwan quakes of last fall.

http://www.city.kobe.jp/cityoffice/06/013/report/index-e.html

The city of Kobe, Japan, has published a report on its Web site titled ***The Great Hanshin-Awaji Earthquake: Statistics and Restoration Progress, November 1, 1999***. Besides providing various statistics, the report, in Japanese and English, discusses such restoration topics as evacuation shelters, temporary housing, land use, socioeconomic rehabilitation, welfare projects, economic revitalization, transportation networks, and more. A link from the report leads to archives of Kobe quake-related texts and images dating from 1995 to 1999.

http://www.wsspc.org

The Western States Seismic Policy Council (WSSPC) has created a Web-based forum for the discussion of earthquake and other disaster costs as well as strategies to ameliorate such losses. The group is open to anyone from any discipline

interested in this issue. Potential topics for discussion range from methods for increasing public awareness, to public risk perception, loss estimation models and improved data collection methods, and the identification of realistic policies to deal with future damaging events. WSSPC anticipates publishing summaries of these discussions in its newsletter, ***EQ: Earthquake Quarterly***, and, based on these summaries, posing new questions to participants. For more information about this discussion group, see the Web site above, or contact *WSSPC, 121 Second Street, 4th Floor, San Francisco, CA 94105; (415) 974-6435; fax: (415) 974-1747; e-mail: wsspc@wsspc.org.*

Landslides

http://landslides.usgs.gov/
http://landslides.usgs.gov/html_files/nlicsun.html

The landslide Web page of the U.S. Geological Survey and the Web site for the National Landslide Information Center (NLIC) have moved to the addresses above. The first site describes the National Landslide Hazards Program, lists landslide program publications and current projects, and describes recent landslide events. The NLIC site provides "real-time" monitoring of an active landslide in California, San Francisco Bay area landslide maps, links to landslide information for each state, landslide images, other useful links, a virtual fieldtrip to a Colorado landslide, and access to a new on-line bibliographic database.

Disaster Medicine and Public Health

http://www.HINAP.org

Recently, the World Health Organization unveiled the "Health Information Network for Advanced Planning"—HINAP—on the World Wide Web. HINAP consolidates baseline health information by country, identifies health issues of primary concern, and makes this information available for program planning. Up-to-date information is provided during an emergency, permitting program adjustment due to changing circumstances, thereby minimizing preventable mortality and morbidity. HINAP currently includes health indices, profiles, and analyses, plus outbreak verification, for nine countries: Albania, Angola, Colombia, Kosovo, Macedonia, Indonesia, Nigeria, Tajikistan, and Uganda.

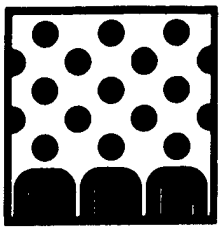
Global Seismic Hazard Map Published

The U.S. Geological Survey and the Swiss Seismological Service have released the first quantitative map of global seismic hazard. The ***Global Seismic Hazard Map*** is a product of the Global Seismic Hazard Assessment Program (GSHAP), launched in 1992 and terminated last year, which was part of the United Nations International Decade for Natural Disaster Reduction. Hundreds of scientists from most of the world's countries cooperated to produce the map, which depicts peak ground acceleration that has a 10% chance of being exceeded in the next 50 years. Peak ground acceleration can be applied to building codes, and the map was created in part as a tool for land-use planning and building design in areas subject to earthquake hazards.

The GSHAP map and all associated documentation, including regional reports, maps of seismicity, source characterization information, and yearly reports, are available via the Internet through the GSHAP homepage: *http://seismo.ethz.ch/GSHAP/*. While supplies last, free copies of the ***Global Seismic Hazard Map*** can be ordered from:

Swiss Seismological Service
ETH Hoenggerberg
8093 Zurich
Switzerland
E-mail: sed@seismo.ifg.ethz.ch

USGS/CRGHT
MS 966 Box 25046
Denver, CO 80225
USA
E-mail: gshapmap@usgs.gov



CONFERENCES AND TRAINING

Below are the more recent conference announcements received by the Natural Hazards Center. A comprehensive list of hazard/disaster meetings is posted on our World Wide Web site: *http://www.colorado.edu/hazards/conf.html.*

Second U.S. Weather Research Program (USWRP) Science Symposium. Sponsors: National Oceanic and Atmospheric Administration and others. Boulder, Colorado: March 27-28, 2000. This symposium will serve the dual purposes of allowing researchers to present new USWRP studies and to examine the effectiveness of current projects and approaches to improve weather prediction. The focus this year will be on quantitative precipitation forecasting, data assimilation, and the optimal mix of observations. The organizers seek not only participants from USWRP projects, but other researchers who would like to present relevant findings. For more information, contact *Carey Bousquet, National Center for Atmospheric Research, P.O. Box 3000, Boulder, CO 80307-3000; (303) 497-8197; e-mail: bousquet@ucar.edu.*

"Partners in Emergency Preparedness 2000" Conference. Sponsors: King County Office of Emergency Management and others. Bellevue, Washington: April 25-26, 2000. This joint business, government, and volunteer agency disaster preparedness regional conference will bring these three sectors together to discuss how to plan for, respond to, and recover from natural, technological, and terrorist events. The two-day conference offers 32 educational sessions covering such diverse topics as business disaster planning, employee training for disasters, emergency preparedness for colleges and universities, pre- and postearthquake evaluations of buildings, disaster mental health, sheltering pets and livestock, tabletop exercises for earthquakes, the Incident Command System, joint information centers, lessons learned from the World Trade Organization meeting and Y2K, volunteer disaster responder training, and pandemics. Interested persons can register on-line at *http://hrs.crgnet.com/wwen*, or contact *Shad Burcham, King County Office of Emergency Management, 7300 Perimeter Road South, Seattle, WA 98018-3848; (206) 205-8106; fax: (206) 296-3838; e-mail: shad.burcham@metrokc.gov.*

Fifth Annual Northern Plains Convective Workshop. Hosts: Environment Canada Prairie Storm Prediction Centre, Canadian Meteorological and Oceanographic Society, and the University of Winnipeg. Winnipeg, Manitoba, Canada: April 25-27, 2000. Participants in this workshop will "address the need to improve the understanding and forecasting of northern plains convection (in particular, as it relates to severe weather)." The meeting will examine warnings and preparedness as well as research opportunities regarding severe meteorological events in the northern Great Plains. Persons interested in presenting should send an expression of interest and/or abstract (electronic versions preferred) by March 22, 2000, to *Jay Anderson; fax: (204) 983-0109; e-mail: Jay.Anderson@ec.gc.ca.* For more information, contact *Pat McCarthy, Severe Weather Program Manager, Prairie Storm Prediction Centre, Environment Canada, 123 Main Street, Suite 150, Winnipeg, Manitoba, Canada R3C 4W2; (204) 983-1904; fax: (204) 983-0109; e-mail: Patrick.McCarthy@ec.gc.ca.*

American Society of Civil Engineers (ASCE) Forensics 2000 Conference. San Juan, Puerto Rico: May 21-24, 2000. This conference, intended for architects, engineers, educators, and building owners, will feature case studies and presentations on measures that can be taken to save lives and property from structural failure. It will include a 20-year retrospective of the Kansas City Hyatt Regency failure, as well as sessions on the pitfalls of computer analysis, lessons learned from natural disasters, professional ethics, education issues, communication problems, and the role of inspection and maintenance in building safety. The meeting includes a one-day preconference workshop entitled "Potential Disaster Assessment 101" that will examine the recent Turkey and Taiwan earthquakes. For details, see *http://www.asce.org/conferences/forensics*, or contact *ASCE World Headquarters, 1801 Alexander Bell Drive, Reston, VA 20191-4400; (800) 548-2723 or (outside the US) (703) 295-6300; fax: (703) 295-6144.*

Second Pan American Congress for Disaster and Emergency Medicine. Sponsors: World Association of Disaster and Emergency Medicine, Pan American Health Organization, and others. Mexico City, Mexico: May 22-24, 2000. The congress program covers disaster medicine, prehospital emergency medical services, emergency medicine, the role of nurses in emergencies, critical care medicine and nursing, and trauma management. It also includes several pre-

congress workshops. For details, contact *Prehospital and Disaster Medicine, E5/613 Clinical Sciences Center, 600 North Highland Avenue, Madison, WI 53792; e-mail: mlb@medicine.wisc.edu; WWW: http://pdm.medicine.wisc.edu/pdmcalendar.html.*

In the Aftermath of Hurricane Floyd: Recovery in the Coastal Plain. Presented by: East Carolina University. Greenville, North Carolina: May 24-26, 2000. This meeting will involve a critical examination of Hurricane Floyd, the resulting floods, and their impact on eastern North Carolina. It will bring together policy makers, research scientists, relief and recovery specialists, officials from all levels of government, and local citizens to address what can be done to mitigate future loss of life and property in similar disasters. More information is available from *John R. Maiolo, Conference Chair, A-421 Brewster Building, Department of Sociology, East Carolina University, Greenville, NC 27858-4353; (252) 328-4838; e-mail: maioloj@mail.ecu.edu.*

American Geophysical Union (AGU) Spring Meeting. Washington, D.C.: May 30-June 3, 2000. AGU conferences typically include sessions focusing on natural hazards of various kinds—from landslides to El Niño. To see what the spring meeting has to offer, contact the *AGU Meeting Department, 2000 Florida Avenue, N.W., Washington, DC 20009; (800) 966-2481 or (202) 462-6900; fax: (202) 328-0566; e-mail:meetinginfo@agu.org; WWW: http://www.agu.org/meetings.*

Communication Essentials for Environmental Managers. Offered by: University of California-Berkeley Extension. San Francisco, California: June 1-2 and 8-9, 2000. This is one of several multiple weekend courses on emergency preparedness and continuity planning offered by the University of California-Berkeley Extension. All courses are conducted in San Francisco. For more information about this program, contact *Environmental Management/Continuing Education in Engineering, University Extension, University of California, Berkeley, CA 94720; (510) 643-7143; WWW: http://www.unex.berkeley/edu.*

Reaching Women and Children in Disaster: A Global Workshop for Policy Makers, Practitioners, and Researchers. Miami, Florida: June 3-6, 2000. The organizers are currently seeking program proposals and sponsors. To contribute or to learn more about this event, contact *Betty Morrow, International Hurricane Center, Florida International University, Miami, FL 33199; (305) 348-1607; fax: (305) 385-7364; e-mail: morrowb@fiu.edu; WWW: http://www.anglia.ac.uk/geography/rwcidconference.*

Public Health in Complex Emergencies Training Course. Sponsor: Columbia University Joseph L. Mailman School of Public Health and others. Neum, Bosnia-Herzegovina: June 4-17, 2000; Garden City, New York: August 13-26, 2000; Uganda: November 2000 (specific dates and venue to be determined). This two-week training course focuses on the critical public health issues faced by agencies and personnel working in complex emergencies. Its goal is to improve the ability of humanitarian assistance workers to respond. Areas to be examined include epidemiology, communicable disease, environmental health, nutrition, reproductive health, ethical issues, violence, weapons, trauma, psychosocial problems, and coordination issues. The course is currently offered only in English. To apply or receive more information, contact *Lorna Stevens, International Rescue Committee (IRC), Health Training, 122 East 42nd Street, New York, NY 10168; (212) 551-3005; fax: (212) 551-3185; e-mail: shortcourse@intrescom.org.*

Multihazard Building Design Summer Institute (MBDSI). Offered by: Federal Emergency Management Agency (FEMA), Emergency Management Institute. Emmitsburg, Maryland: July 24-28, 2000 (Flood and Wind Mitigation Design); July 31-August 4, 2000 (Earthquake Mitigation and Fire Safety Design). The MBDSI was developed by FEMA to provide technical information and training to design and construction educators and professionals on effective approaches to mitigate wind, flood, earthquake, and fire hazards. Applicants should be engineering or architectural faculty, preferably at a four-year institution. There is no charge for registration, tuition, or text books, and some travel expenses can be covered. For more information, see *http://www.fema.gov/emi/mbdsi3.htm* or contact the course manager, *Joe Bills, FEMA, Emergency Management Institute, 16825 South Seton Avenue, Emmitsburg, MD 21727; e-mail: joe.bills@fema.gov.*

American Sociological Association Conference. Washington, D.C.: August 12-16, 2000. The International Sociological Association Research Committee will host a session at this conference on "Feminist Theories and Approaches to Disaster." The organizers seek papers that focus on the contributions of feminist theories and methods to disaster research and response. Interested persons should send an outline of their paper (the complete paper if available) and curriculum vitae to *Betty Morrow, International Hurricane Center, Florida International University, Miami, FL 33199; (305) 348-1607; fax: (305) 385-7364; e-mail: morrowb@fiu.edu.*

Fourth International Conference of Local Authorities Confronting Disasters and Emergencies—LACDE 4. Reykjavik, Iceland: August 27-30, 2000. The main theme of LACDE 4 will be "The Linkage Between Science and Local Authorities." Another significant portion of the meeting will focus on partnerships and the interaction between national, provincial, and state governments and local authorities. The organizing committee is also developing a program of simultaneous workshops covering various aspects of meteorological, geological, and technological disasters, as well as discussions on new technology in disaster forecasting, lessons from past disasters, and communication and lifeline safety. Ministers, members of parliament, municipal officials, scientists, and other professionals are invited to take part in the program. The official language will be English, but simultaneous translation will be offered if warranted. More information is available from the *Union of Local Authorities in Israel, 3 Heftman Street, P.O. Box 20040, Tel Aviv 61200, Israel; tel: +972-3-695-5024; fax: +972-3-691-6821; e-mail: unnar@samband.is or ulais@*

netvision.net.il; WWW: http://www.samband.is/lacde or http://www.ulai.org.il/f_lacde.htm.

International Public Works Congress and Exposition. Louisville, Kentucky: September 10-13, 2000. This conference includes educational sessions on various aspects of emergency management affecting public works officials. For a conference flyer and to learn about specific sessions, contact the *American Public Works Association, 2345 Grand Boulevard, Suite 500, Kansas City, MO 64108-2641; (816) 472-6100; fax: (816) 472-1610; e-mail: apwa@apwa.net; WWW: http://www.apwa.net/conferences/congress00.htm.*

International City/County Management Association (ICMA) Annual Conference. Cincinnati, Ohio: September 17-20, 2000. Every year since 1914, with the single exception of 1945, ICMA has sponsored a conference to review local government developments, discuss management issues, adopt policy statements, and conduct official association business. The meeting invariably includes sessions on the role of local government in disaster preparedness, response, and mitigation. To find out what's in store for this year, contact *ICMA, 777 North Capitol Street, N.E., Suite 500, Washington, DC 20002; (202) 289-4262; fax: (202) 962-3500; e-mail: apeyton@icma.org; WWW: http://icma.org.*

International Symposium on Flood Defence. Sponsors: American Geophysical Union, International Association of Hydraulic Research, and International Association of Hydrological Sciences. Kassel, Germany: September 20-23, 2000. This symposium will cover hydrological data and precipitation processes, runoff modeling, flood risk, and new developments in flood prevention and flood estimation. Parallel events include a colloquium on the "History of Flood Defence," and a workshop on "Pollutants and Disease Pathogens in Floods." The symposium will be conducted in English. More information is available from *Barbara Breuer, c/o Universitat Gh Kassel, FB 14, FG Geohydraulik und Ingenieurhydrologie, P.O. Box 101380, D-34109 Kassel, Germany; tel: +49 561 8042808; fax: +49 561 8043953; e-mail: breuerb@hrz.uni-kassel.de; WWW:http://www.uni-kassel.de/fb14/wasserbau/symposium2000 or http://www.uni-kassel.de/fb14/geohydraulik/.*

Dam Safety 2000: Association of State Dam Safety Officials (ASDSO) Annual Conference. Providence, Rhode Island: September 26-29, 2000. The ASDSO annual meeting addresses all aspects of dam safety—from construction, to maintenance, inspection, and warning systems. Details are available from *ASDSO, 450 Old Vine Street, Second Floor, Lexington, KY 40507; (606) 257-5140; fax: (606) 323-1958; e-mail: info@damsafety.org; WWW:http://www.damsafety.org or http://members.aol.com/damsafety/homepage.htm.*

American Geophysical Union (AGU) Fall Meeting. San Francisco, California: December 15-19, 2000. As with the spring meeting noted above, the AGU fall conference will, no doubt, include numerous sessions on natural hazards such earthquakes, landslides, and climate change. Details are available from the *AGU Meeting Department, 2000 Florida Avenue, N.W., Washington, DC 20009; (800) 966-2481 or (202) 462-6900; fax: (202) 328-0566; e-mail: meetinginfo@agu.org; WWW: http://www.agu.org/meetings.*

12th World Congress on Disaster Medicine. Organizer: World Association for Disaster and Emergency Medicine. Lyon, France: May 9-12, 2001. At this congress, practitioners will share experience and present research regarding emergency, catastrophe, and refugee medicine. The meeting will focus on the practical demands of catastrophe situations—setting up a triage center, handling radio communications, and establishing identification procedures, for example. Participants will also discuss how to evaluate medical practice and examine new tools available to educators. The conference will be conducted in English, Spanish, and French, and will include two specialized trilingual one-day symposia—the first for emergency nursing staff, the second for paramedics, emergency medical teams, and ambulance staff. Detailed information is available from *WDCEM 2001, 1 rue de la Bannierè, 69003 Lyon, France; fax: 33 (0)4 72 60 92 89; e-mail: wcdem2001@aol.com (also see http://pdm.medicine.wisc.edu/pdmcalendar.html.)*

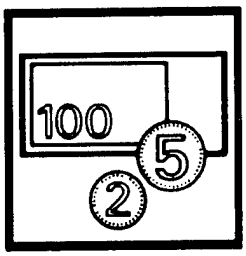
Sixth Scientific Assembly of the International Association of Hydrological Sciences (IAHS). Maastricht, The Netherlands: July 18-27, 2001. The IAHS assembly will cover virtually all aspects of water management and will include a symposium on floods and land use as well as other sessions and presentations on flooding and floodplain management. Participants who wish to present a paper or a poster should submit an abstract of 300-400 words in either English or French before April 15, 2000. For a congress circular, contact *IAHS Maastricht 2001, c/o Conference Agency Limburg, P.O. Box 1402, 6201 BK Maastricht, The Netherlands; tel: +31 43 3619192; fax: +31 43 3619020; e-mail: cal.conferenceagency@wxs.nl; WWW:http://www.wlu.ca/~wwwiahs/index.html.*

Looking Ahead . . .

These meetings are currently being organized. Proposals regarding form and content should be directed to the points of contact listed below.

Twelfth European Conference on Earthquake Engineering. London, U.K.: September 2002. Contact: *Liz Marwood, Society for Earthquake and Civil Engineering Dynamics, Institution of Civil Engineers, One Great George Street, Westminster, London SW1P 3AA, U.K.; tel: 0171-665-2238 or 0171-222-7722; fax: 0171-799-1325; e-mail: Marwood_L@ice.org.uk; WWW: http://www.bham.ac.uk/CivEng/seced/12ecee01.htm.*

Eleventh International Conference on Wind Engineering. Lubbock, Texas: Sometime in 2003. Contact: *The Wind Engineering Research Center, Box 41023, Texas Tech University, Lubbock, TX 79409-1023; (888) 946-3287 or (806) 742-3479; fax: (806) 742-3446; e-mail: amacdowell@coe.ttu.edu; WWW: http://www.wind.ttu.edu.*



CONTRACTS AND GRANTS

These are recently awarded contract and grants for the study of hazards and disasters. An inventory of contracts and grants awarded from 1995 to the present (primarily those funded by the National Science Foundation) is available on the Natural Hazards Center's Web site: *http://www.colorado.edu/grants.html.*

Developing Guidance and Expertise on Sustainable Recovery from Disaster for Communities. Funding: Public Entity Risk Institute, $175,024, 20 months. Principal Investigator: *Mary Fran Myers, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-2150; fax: (303) 492-2151; e-mail: myersmf@colorado.edu; WWW: http://www.colorado.edu/hazards.*

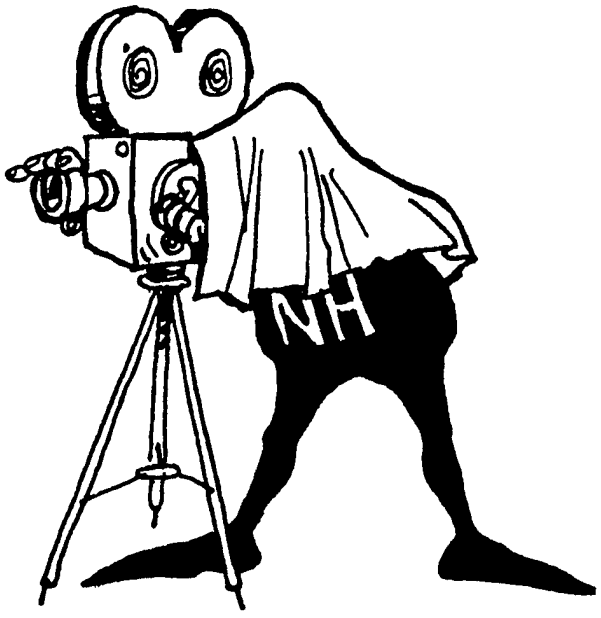
This project is a follow-up to the Natural Hazards Center's previous investigation of the feasibility of using teams of experts to help stricken communities recover from disaster. In this phase, information will be developed on "sustainable local recovery"' and training will be conducted to generate expertise on this topic throughout the nation. The focus of the materials and training will be on helping localities understand, plan for, and implement recovery policies and activities that will enhance their overall sustainability through reduced vulnerability to hazards. The project will result in a guidebook on sustainable local recovery and culminate in a pilot training session on the topic. A database of disaster professionals involved in recovery and sustainability will also be developed.

Emergency Management Standards and Accreditation Project. Funding: Federal Emergency Management Agency (FEMA), $95,000, 24 months. Contact: *Tina Hembree, National Emergency Management Association (NEMA), Council of State Governments, P.O. Box 11910, Lexington, KY 40578; (606) 244-8000; e-mail: thembree@csg.com; WWW: http:// www.nemaweb.org.*

NEMA has received funding from FEMA to develop an emergency management standards and accreditation program. The association has established an initial working group, composed of representatives from NEMA, FEMA, the International Association of Emergency Managers, and state representatives, that will address emergency management functions. The working group will develop a commentary that builds on the National Fire Protection Association's 1600 Standards (see the ***Observer***, Vol. XXIV, No. 3, p. 10) by providing materials that explain contemporary best practices in emergency management.

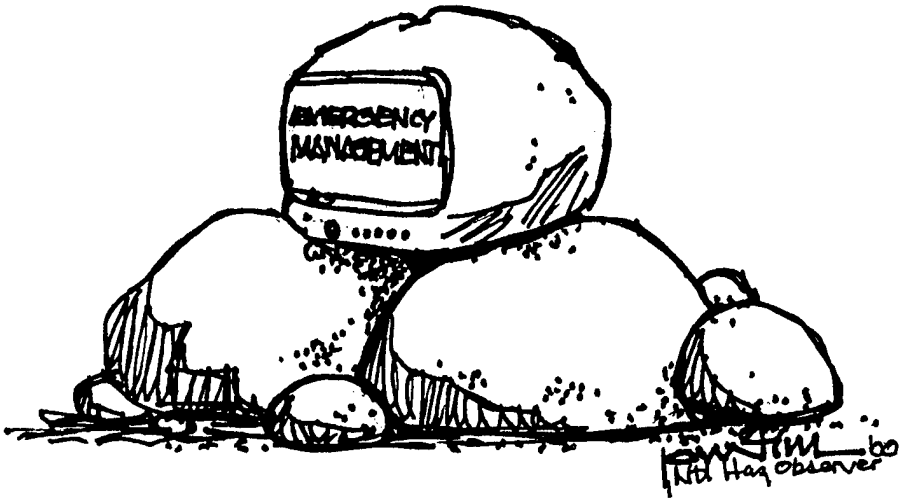
Flood Hazard Mitigation Community Training Video. Funding: Public Entity Risk Institute, $80,000, 12 months. Contact: *Diane Watson, Association of State Floodplain Managers (ASFPM), 2809 Fish Hatchery Road, Suite 204, Madison, WI 53713; (608) 274-0123; fax: (608) 274-0696; e-mail: asfpm@floods.org; WWW: http://www.floods.org.*

Approximately 18,000 communities in the U.S. are threatened by floods. To help these communities reduce losses and better prepare, the ASFPM will produce and distribute a video, aimed at local government officials, community representatives, and citizens, that provides guidance on reducing flood damage. It will emphasize preparing a community flood mitigation plan and outline steps for accomplishing this task, including establishing a mitigation planning committee, identifying areas appropriate for acquisition and redevelopment, identifying methods to reduce or eliminate exposure to floods, adopting a plan, and monitoring implementation.



From Red Rocks Community College

Emergency Management Education On-Line



As society's exposure to hazards increases and as emergency management career opportunities increase in parallel, the professional emergency manager must master new and increasingly complex skills. To do this, continuing education is essential. Recognizing this need, faculty at Red Rocks Community College in Lakewood, Colorado, have developed a program to serve the many prospective students who, for a variety of reasons, are unable to attend traditional classes. They have developed an Internet program exclusively for emergency management personnel.

Students taking the Red Rocks on-line courses can obtain an Associate of Applied Science Degree in Emergency Management and Planning or an Emergency Management Certificate. The 60-credit-hour associate degree is geared toward new entrants into the emergency management field, while the certificate program, requiring 30 credit hours, is for current practitioners wanting to upgrade their skills. The program includes all seven courses required for the Federal Emergency Management Agency Professional Development Series Certificate. Being on the Internet, the courses are available to students anywhere.

Anyone interested in the Red Rocks Emergency Management distance learning courses can access a complete list of offerings and register for courses via the World Wide Web at *http://www.ccconline.org/catalog/index.cfm*. To receive more information, including a program brochure, contact *Red Rocks Community College, 13300 West 6th Avenue, Lakewood, CO 80228-1255; (303) 914-6462; fax: (303) 914-6803; e-mail: emp@rrcc.cccoes.edu.*

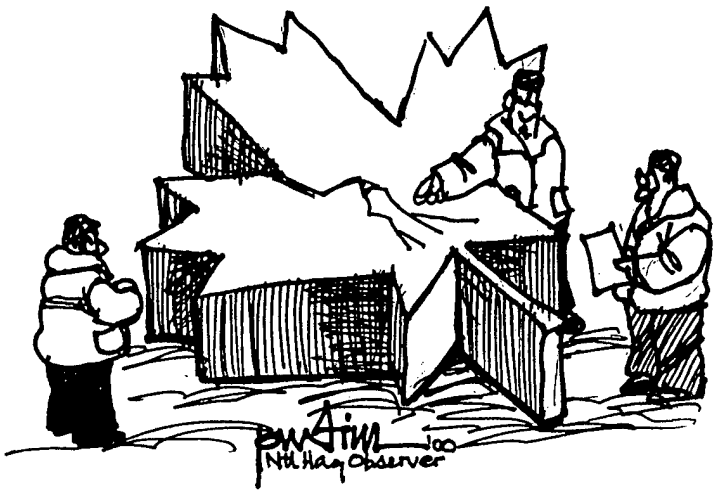
MCEER Offers Mitigation Plans

To assist those involved in planning disaster-resistant communities, particularly people and institutions involved in the Federal Emergency Management Agency's Project Impact, the Multidisciplinary Center for Earthquake Engineering Research (MCEER) Information Service recently added a number of model mitigation plans from various states and communities to the State University of New York at Buffalo library collection. The plans can be borrowed from university libraries, and planners can use them as models for designing postdisaster recovery and reconstruction programs in their communities. For additional information contact *Laura Taddeo, MCEER Information Service, State University of New York at Buffalo, Science and Engineering Library, 304 Capen Hall, Buffalo, NY 14260-2200; (716) 645-3377; fax: (716) 645-3379; e-mail: ltaddeo@acsu.buffalo.edu.*

Seeking Participants/Contributors

An Assessment of Natural Hazards and Disasters in Canada

Environment Canada, in cooperation with Emergency Preparedness Canada and the Geological Survey of Canada, is in the initial stages of preparing an assessment of knowledge and research regarding natural hazards and disasters in Canada. This assessment is expected to be similar in many ways to the one conducted at the Natural Hazards Center, which resulted in the book, ***Disasters by Design: A Reassessment of Natural Hazards in the United States***, by center director Dennis Mileti (see the ***Observer***, Vol. XXIII, No. 4, p. 3).



For the Canadian effort, an initial workshop will be held in Toronto, May 11-12, 2000, to create a common vision of the nature of the assessment, develop a table of contents, and assign a variety of responsibilities to participants. Work will include the identification of lead authors and contributors, chapter organizers, editors, and other participants and roles. The project is expected to take approximately three years to complete.

The organizers understand that while the triggers of disasters can be natural environmental events, vulnerability is largely a product of socioeconomic forces. Hence, this project is a cross-sectoral, multidisciplinary exercise. Additionally, all important natural hazards will be examined, including hydrometeorological (e.g., floods, droughts, winter storms) and geophysical (e.g., earthquakes, landslides) events.

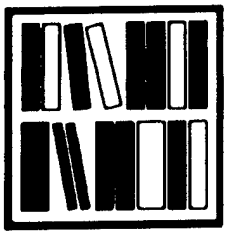
Persons interested in attending this workshop, becoming involved in the research, or obtaining more information, should contact *David Etkin, Adaptation and Impacts Research Group, University of Toronto, Environment Canada, 33 Willcocks Street #1016V, Toronto, Ontario, Canada M5S 3E8; (416) 978-6310; fax: (416) 978-3884; e-mail: david.etkin@ec.gc.ca; WWW: http://www1.tor.ec.gc.ca/airg*. Limited funding is available for travel for nongovernment participants.

ISA Seeks Exemplary Hazards Scholars

The International Sociological Association's Research Committee on Disaster has established the Samuel Henry Prince Award Committee to encourage and acknowledge excellence in disaster scholarship. The committee honors young scholars who, in their dissertation research, make a distinguished contribution to the field of disaster research. Dissertations from any discipline will be considered for the award, there is no restriction on the number of awards given within a particular timeframe, and an award may be made up to five years after successful defense of a dissertation. The committee will outline the merits of successful dissertations in an official announcement presented at the World Congress of Sociology.

To nominate a scholar for this award, copies of the dissertation and a nominating letter from someone familiar with the dissertation's contribution to disaster research or a letter of endorsement from the supervisor of the dissertation should be sent to each committee member listed below. In either case, the letter should provide the title, date, and discipline of the dissertation, should indicate consent of the scholar, and should provide an address to which the committee can address further correspondence. The committee chair will acknowledge receipt of a submission and will outline the procedures followed by the committee.

Inquiries should be directed to the committee chair, *Neil R. Britton, Ministry for Emergency Management, c/o P.O. Box 11-388, Wellington, New Zealand; e-mail: neil.britton@dia.govt.nz*. Other committee members include *Kenneth Hewitt, Department of Geography, Wilfred Laurier University, Ontario, Canada N2L 3C5*, and *Peter May, Department of Political Science, University of Washington, Seattle, WA 98195*.



RECENT PUBLICATIONS

Below are summaries of some of the recent, more useful publications on hazards and disasters received by the Natural Hazards Center. A complete bibliography of publications received from 1995 through 2000 is posted on our World Wide Web site: *http://www.colorado.edu/bib/bib.html.*

All Hazards

***Environmental Hazards: Human and Policy Dimensions**, Vol. 1, No. 1 (June 1999). Subscriptions: $58.00, individuals; $125.00, institutions. To subscribe, contact Elsevier Science, Regional Sales Office, Customer Support Department, 655 Avenue of the Americas, New York, NY 10010; (212) 633-3680; WWW: http://www.elsevier.nl.*

This new journal addresses the full range of hazards, from extreme geological, hydrological, atmospheric, and biological events such as earthquakes, floods, storms, and epidemics to technological failures such as industrial explosions, fires, and toxic materials releases. It focuses on issues related to human vulnerability, awareness, and response. This inaugural issue contains papers that examine hazards in the current era of environmental and societal transformation, the differences between human-caused and geophysical environmental damage, community sustainability, the use of building codes to implement earthquake hazard mitigation, the reframing of global disaster policies, and environmental hazards in Russia.

*"Are You Prepared for Disaster?" **History News**, Vol. 54, No. 3 (Summer 1999). $13.00. To subscribe, contact the American Association for State and Local History, 1717 Church Street, Nashville, TN 37203-9013; (615) 320-3203; fax: (615) 327-9013; e-mail: history@aaslh.org.*

Institutions responsible for protecting and sharing the history of our culture must prepare for disasters. This issue of ***History News*** includes articles on the lack of local histories and understanding about disasters and their impacts; the National Task Force on Emergency Response, an effort to reduce the future impact of natural disasters on cultural and historic institutions in the U.S.; and the recovery from a tornado at the Hermitage, President Andrew Jackson's home. It also includes a list of cultural heritage resources supporting disaster preparedness, response, and recovery and a "Technical Leaflet" produced by the American Association for State and Local History, ***Protecting Cultural Heritage Properties from Fire***, by J. Andrew Wilson.

***Open for Business: A Disaster Planning Toolkit for the Small Business Owner.** 1999. 40 pp. $10.00, printed copies; free, Internet version. To order, contact the Institute for Business and Home Safety (IBHS), 175 Federal Street, Suite 500, Boston, MA 02110-2222; (617) 292-2003; fax: (617) 292-2022; e-mail: info@ibhs.org; WWW: http://www.ibhs.org.*

IBHS and the Small Business Administration created this publication to guide small businesses in identifying potential hazards; planning for and reducing the impacts of disasters; continuing to operate after a disaster occurs; and obtaining insurance, disaster supplies, and other necessities. The kit contains "worksheets" for contacting creditors, customers, and suppliers; creating a disaster supply kit; developing an emergency contact list; and inventorying business assets. An employee disaster safety poster (17" x 23") outlines employee protection from earthquakes, hurricanes, tornadoes, floods and flash floods, severe thunderstorms, and wildfires. It also lists the items that should be included in a company's disaster supply kit.

***Business Risk Assessment.** David McNamee. 1998. 107 pp. $85.00, nonmembers; $75.00, members. To order, contact the Institute of Internal Auditors, 249 Maitland Avenue, Altamonte Springs, FL 37201-4201; (877) 867-4957 or (770) 442-9742; e-mail: iiapubs@pbd.com; WWW: http://www.theiia.org.*

Risk analysis is a decision-making tool that involves considering the consequences of alternative actions. Because businesses must function in an ever-changing environment, awareness of evolving risks is crucial to survival. In ***Business Risk Assessment***, McNamee discusses the nature of risk, processes that mitigate risk, business risk assessment in general, risk identification, risk measurement, risk prioritization, and risk modeling. He provides a risk management self-assessment questionnaire that involves all parts of an organization and leads to organization-wide risk management controls that result in an effective response to rapidly changing conditions.

A second volume, ***Risk Management: Changing the Internal Auditor's Paradigm*** (1998; 230 pp.; $69.00, nonmembers; $60.00, members), by David McNamee and Georges M. Selim, is also available from the address above.

A Year, a Century, and a Millennium of Natural Catastrophes

In the last 1,000 years, more than 15 million people have died in at least 100,000 natural disasters, according to the Munich Reinsurance (MunichRe) Geoscience Research Group, which has been gathering detailed world disaster data for over 25 years. The group recently published ***Topics 2000: Natural Catastrophes—The Current Position*** (1999, 126 pp., free). Based on MunichRe's comprehensive data, the report presents interesting facts about the consequences of earthquakes, floods, windstorms, and other natural disasters, as well as a history of major disasters in the second millennium. It contains numerous photos, as well as charts and graphs that indicate the number of events, economic losses, fatalities, and insured losses. It also discusses the reasons for the increase in natural catastrophes—population growth, climate change, development of at-risk areas, and building practices. In particular, the report focuses on disaster trends over the last 50 years, noting that economic losses have continued to increase at an alarming rate, and discusses the implications of these losses for the insurance industry.

Copies of the report, order number 2895-M-e, are free and can be obtained from *Angelika Wirtz, Geoscience Research Group, Munich Reinsurance Company, Königstrasse 10, 80791 Munich, Germany; tel: 4989 3891-3453; e-mail: awirtz@munichre.com.* Information contained in the report is also available from the company's Web site: *http://www.munichre.com.*

Metro Plans for Natural Hazards

Metro Regional Services, the planning body for the Portland, Oregon, metropolitan area, has done much work to identify and mitigate the hazards threatening that area. The Metro Natural Hazards Program recently created a Web site dedicated to informing the public about risks in the region; it can be viewed at *http://hazards.metro-region.org*. The site contains earthquake, landslide, and flood maps of the Portland area; links to other hazards sites; news releases; and publications and information on how to order them.

Metro recently sent the Natural Hazards Center some of their newest publications, including:

- ***Landslides in the Portland, Oregon, Metropolitan Area Resulting from the Storm of 1996: Inventory Map, Database and Evaluation, by Scott F. Burns, William J. Burns, David H. James, and Jason C. Hinkle. 1998. 69 pp. $20.00, plus $1.00 shipping.*** In February 1996, the Portland area experienced extensive landsliding following widespread flooding. This document contains a report from the geology department of Portland State University, which helped Metro develop landslide susceptibility maps for the area. It describes the methods used to develop the maps.
- ***Evaluation of Non-Residential and Multi-Family Residential Buildings for Seismic Risk: Portland Metropolitan Area. 1998. 58 pp. $5.00, plus $1.00 shipping.*** This report describes a study conducted by Metro that evaluates existing building stock relative to earthquake hazards. It also describes how local governments and businesses can rate and prioritize their buildings in order to enhance current seismic retrofit efforts.
- ***Exposure of Vital Systems and Key Facilities to Earthquake Hazard. 1998. 96 pp. $10.00, plus $1.00 shipping.*** This document was prepared to support decisions concerning location, design, and maintenance of important infrastructure and facilities in relation to earthquake hazards. It describes the risks faced by infrastructure and transportation systems, fire stations, police stations, hospitals, hazardous materials storage areas, and schools.
- ***Regional Hazard Mitigation Policy and Planning Guide: Reducing Disaster Losses. 1999. 216 pp. $5.00, plus $2.50 shipping.*** The ***Planning Guide*** outlines natural hazards mitigation planning and policy for the Portland area. Designed to complement Metro's growth management planning efforts, it provides an overview of natural hazards and describes possible measures to mitigate future disaster losses. The complete guide can also be viewed online at *http://hazards.metro-region.org*.

All items can be purchased from the *Metro Data Resource Center, 600 N.E. Grand Avenue, Portland, OR 97232-2736; (503) 797-1742; fax: (503) 797-1909; e-mail: drc@metro.dst.or.us; WWW: http://www.metro.dst.or.us.*

Tornadoes

Midwest Tornadoes of May 3, 1999: Observations, Recommendations, and Technical Guidance. FEMA 342. 1999. 218 pp. Free. Copies can be requested from the Federal Emergency Management Agency (FEMA), Publications Distribution Facility, P.O. Box 2012, Jessup, MD 20794-2012; (800) 480-2520. The Web version can be viewed at http://www.fema.gov/mit/bpat.

In May of last year, an outbreak of tornadoes tore through areas of Oklahoma and Kansas, leveling entire neighborhoods and killing 49 people. FEMA deployed a Building Performance Assessment Team (BPAT) to the area to evaluate building successes and failures, and their findings are contained in this document. The report provides a history of the storm, a general assessment and characterization of the damage, and observations on residential and nonresidential property protection and on personal protection and sheltering. It also includes recommendations from the BPAT regarding wind-resistant building codes, ordinances that incorporate tornado shelters into new construction and communities, improvements in manufactured homes and their connections to foundations, improved construction techniques and materials, enforcement of existing building codes, and many other activities that could reduce risk from tornadoes.

Floods

The Los Angeles River: Its Life, Death, and Possible Rebirth. Blake Gumprecht. 1999. 384 pp. $39.95. Available from Johns Hopkins University Press, 2715 North Charles Street, Baltimore, MD; (800) 537-5487; fax: (410) 516-6998; WWW: http://www.press.jhu.edu/press.

Three centuries ago, the Los Angeles River meandered through marshes and forests of willow and sycamore. Today, it runs through concrete and is probably best known as a place where Hollywood movie studios film high-speed car chases. In this volume, Blake Gumprecht describes the dramatic changes to the river wrought by various flood-control projects. Despite its usually meager flow, in the past the river was unpredictable and prone to flooding during winter rains, often shifting its course with each new storm. Repeated catastrophic floods in the late 19th and early 20th centuries led to a comprehensive regional flood-control program. Gumprecht describes these developments and the complex and often controversial processes by which the river was straightened, deepened, and widened, and its new channel lined with concrete from its source to the sea.

Hydrological Extremes: Understanding, Predicting, Mitigating. 1999. 314 pp. £46.50. Copies can be purchased from Jill Gash, International Association of Hydrological Sciences (IAHS) Press, Institute of Hydrology, Wallingford, Oxfordshire OX10 8BB, U.K; tel: +44 1491 692442; fax: +44 1491 692448/692424; e-mail: jilly@iahs.demon.co.uk.

Hydrological Extremes contains 39 papers, the edited proceedings of a symposium held during the General Assembly of the International Union of Geodesy and Geophysics in the U.K. in July 1999. Papers are organized around four major themes: links between atmospheric circulation patterns and hydrological extremes, natural processes that cause these extreme events, methods for prediction of the severity of drought and floods, and mitigation of these phenomena.

Comprehensive River Basin Development: The Tennessee Valley Authority. Barbara A. Miller and Richard B. Reidinger, Editors. World Bank Technical Paper No. 416. 1998. 104 pp. $22.00. Available from the World Bank, P.O. Box 960, Herndon, VA 20172-0960; (800) 645-7247 or (703) 661-1580; fax: (703) 661-1501; e-mail: books@worldbank.org; WWW: http://www.worldbank.org.

Established more than 65 years ago to guide the development of the resources of the Tennessee River Basin, the Tennessee Valley Authority (TVA) subsequently constructed a vast infrastructure of multipurpose dams and reservoirs and continues to operate a wide variety of programs in the region that deal with water, power, economic development, and the environment. This report presents an overview of TVA's growth and development, its institutions, and its operational programs.

Living with the Lakes: Understanding and Adapting to Great Lakes Water Level Changes. 1999. 38 pp. Free. Copies are available from the Great Lakes Commission, Argus II Building, 400 Fourth Street, Ann Arbor, MI 48103-4816; (734) 665-9135; WWW: http://www.glc.org/docs/lakelevels/lakelevels.html.

Unlike oceans, where tides and levels are relatively constant and predictable, water levels on the Great Lakes can vary significantly over both the short and long term, making them difficult to predict accurately. This document describes the Great Lakes-St. Lawrence

River Basin; natural factors that affect lake levels; human influences on the system; methods for controlling water levels; the effects of lake level fluctuations; and options for combating erosion and flooding, including structural and nonstructural measures. It also provides an extensive list of "Points of Contact" from which one can obtain information, as well as Web sites and suggested further reading.

Disaster Time Line: Selected Events and Outcomes (1965-2000)

The Disaster Time Line provides a unique, graphic depiction of major disasters, both natural and technological, that have affected emergency management policies in the U.S. Using colorful graphics, the Disaster Time Line chart (roughly 11" x 32") shows not only major events and the year they occurred, but also after-action reports and analyses, and the influence each entry had on major federal statutes, federal regulations and executive orders, federal response plans, and major federal organizational changes.

Within the U.S., the ***Disaster Time Line*** costs $20.00, including postage. Contact the address below for details about bulk purchases, international mailing costs, or other mailing arrangements. Orders must be prepaid by check or money order and should be directed to *Disaster Time Line, Claire B. Rubin and Associates, P.O. Box 2208, Arlington, VA 22202; (703) 920-7176; e-mail: info@disaster-timeline.com or cbrubin@aol.com.* For more information, see *http://www.disaster-timeline.com.*

Climate and Weather

Encyclopedia of Deserts. *Michael A. Mares, Editor. 1999. 672 pp. $49.95. To order, contact the University of Oklahoma Press, 4100 28th Avenue, N.W., Norman, OK 73069-8218; (800) 627-7377; fax: (405) 364-5798; WWW: http://www.ou.edu/oupress.*

According to its publishers, the ***Encyclopedia of Deserts*** is the first comprehensive reference to the deserts and semideserts of the world. Compiled by 37 experts, the volume contains information on desert biology, geography, climatology, geology, hydrology, anthropology, and history. It also provides information on the causes of arid lands, the types of arid lands that exist, and native peoples. Topics of interest to ***Observer*** readers include agriculture in deserts, alluvial fans, cyclones, dams and deserts, El Niño, flooding, hail, and Santa Ana winds. (But this volume is a true encyclopedia. There's even a section that describes movies filmed in deserts.) Each entry is cross-referenced and contains a "Further Reading" section that lists additional sources of information.

Improving El Niño Forecasting: The Potential Economic Benefits. *Rodney F. Weiher, Editor. To request a copy, contact Rodney Weiher, Chief Economist, Policy and Strategic Planning, National Oceanic and Atmospheric Administration (NOAA), Room 6117, U.S. Department of Commerce, Washington, DC 20230; e-mail: rodney.f.weiher@noaa.gov.*

Determining economic benefits is a useful tool in setting research and operational priorities for NOAA activities as well as gauging the social returns from expenditures of public dollars. This publication describes a NOAA program to quantify the economic benefits of improved forecasts of El Niño climate events. Unlike hurricanes and tornadoes, the El Niño Southern Oscillation (ENSO) is a climatic cycle that has longer-term implications on weather patterns throughout the world. Its 12- to 18-month cycle between warm and cold states can alter temperatures and precipitation to such an extent that they significantly disrupt agriculture, commercial fishing, tourism, and many other businesses and industries. Over the last decade, NOAA has greatly improved forecasting for this phenomenon—70% to 80% accurate a year prior to occurrence. ***Improving El Niño Forecasting*** offers varying perspectives on this technological advance and includes papers that examine the economic value of an improved ENSO forecast, the economic costs of El Niño and La Niña for agriculture, their effects on fuel oil costs, and the value of improved forecasting for agricultural commodities markets and Pacific Northwest fisheries. It also contains a cost/benefit analysis of forecasting systems.

Earthquakes

Implications for Earthquake Risk Reduction in the United States from the Kocaeli, Turkey, Earthquake of August 17, 1999. *Circular 1193. 1999. 65 pp. Free. To obtain a copy, contact the U.S. Geological Survey, Information Services, Box 25286, Federal Center, Denver, CO 80225; (800) 435-7627 or (303) 202-4700; fax: (303) 202-4693. The complete report is also available on-line: http://greenwood.cr.usgs.gov/pub/circulars/c1193.*

In August of last year, a damaging earthquake struck near the Turkish city of Izmit, killing over 17,000 people, injuring more than 43,000, and rendering over 250,000 people homeless. The Kandilli Observatory and Research Institute of Bogazici University in Istanbul invited the U.S. Geological Survey to participate in postearthquake research: this circular contains the findings. The research team, assisted by representatives from the U.S. Army Corps of Engineers and the National Institute for Standards and Technology, have long understood that the Turkish quake zone bears strong similarities to the San Andreas fault system in California. They discuss this geologic setting and the earthquake history of the region, earthquake forecasting, surface faulting, ground shaking, liquefaction, and building performance, and other lessons for the U.S.

Wildfires

Fire on the Mountain: The True Story of the South Canyon Fire. *John H. MacLean. 1999. 275 pp. $35.00. For a list of booksellers who carry this item, see the William Morrow (publisher) Web site: http://www.williammorrow.com/howtoorder.html.*

On the morning of July 3, 1994, a forest fire on Storm King Mountain in Colorado was wrongly recorded as taking place at South Canyon. This oversight became the first of a series of seemingly small human errors that led to the deaths of 14 firefighters three days later. With the aid of papers obtained through the Freedom of Information Act and dozens of interviews, MacLean takes a hard look at the official investigation that followed the fire and the divided conclusions of the investigative team. He also tries to answer three mysteries that surround the blaze: Why wasn't the fire, clearly visible from an interstate highway, put out earlier? Why did a legendary smoke jumper turn back to the fire after making his way to safety? and How could a seasoned group of firefighters be caught off guard?

Tsunamis

1999 Activities of the Tsunami Mitigation Subcommittee: Alaska, California, Hawaii, Oregon, Washington, FEMA. 1999. 62 pp. Free. To request a copy, contact Chris Jonientz-Trisler, Federal Emergency Management Agency (FEMA), Region X, 130 228th Street, S.W., Bothell, WA 98021-9796; (425) 487-4645; fax: (425) 487-4622; e-mail: Chris.Jonientz-Trisler@fema.gov.

The Mitigation Subcommittee of the National Tsunami Hazard Mitigation Program includes representatives from several state programs that promote "tsunami-resistant communities." In addition to these efforts, states collaborate to produce regional products. These activities are detailed in this report, which provides information on the products and programs for each member state along with complete contact information; case studies of successful tsunami-related programs; and multistate projects. Appendices present the results of a survey conducted following an earthquake-induced tsunami warning and a list of Web resources.

Avalanche Professionals Develop New Course Guidelines

Educating those who work and play in steep terrain about the dangers of snow avalanches is critical to their safety. Following a two-year effort, professionals who deal with avalanches, such as ski patrol members, forecasters, and avalanche educators, have produced new guidelines for avalanche education courses in the U.S. These criteria were recently approved by the American Association of Avalanche Professionals' (AAAP) governing board.

The guidelines include a statement of educational philosophy and course objectives and list prerequisites, suggested reading, classroom lecture guidelines, field session guidelines, and post-evaluation items.

The complete set of guidelines is contained in the December 1999 issue of the ***Avalanche Review*** (Vol. 18, No. 1). To subscribe, contact the *AAAP, P.O. Box 1032, Bozeman, MT 59771-1032; (406) 587-3830; fax: (406) 586-4307; e-mail: avalpro@theglobal.net; WWW: http://www.avalanche.org.*

Electronic Items

Community Vulnerability Assessment Tool. *1999. CD-ROM. Free. To request a copy, contact the NOAA Coastal Services Center Clearinghouse, 2234 South Hobson Avenue, Charleston, SC 29405-2413; (843) 740-1210; fax: (843) 740-1315; e-mail: clearinghouse@csc.noaa.gov; WWW: http://www.csc.noaa.gov/products/nchaz.nc.htm.*

This CD explains community vulnerability to coastal hazards in general and presents a tutorial on using a vulnerability assessment method to define risk, identify critical resources, and analyze potential impacts from hazards. The tutorial helps the user analyze physical, social, economic, and environmental vulnerability as well as identify mitigation opportunities at the community level. A case study of Hanover County, North Carolina, illustrates how geographic information systems can be used to accomplish these activities. The CD also contains an examination of various data tools, such as remote sensing and geographic information systems, that can be used to reduce vulnerability.

The Unexpected Catastrophe. *2000. CD-ROM. $80.00 (U.S.), plus $8.00 (Australian) for shipping. To order, contact the Newcastle Region Library, P.O. Box 489, Newcastle NSW 2300, Australia; tel: (612) 4974 5300; fax: (612) 4974 5395; e-mail: irc@ncc.nsw.gov.au; WWW: http://www.ncc.nsw.gov.au/library/eqdb/earthq10.htm.*

This CD-ROM contains an electronic multimedia library on the 1989 Newcastle earthquake. Organized as a database, it includes not just bibliographic information, but the full text of documents, images, and excerpts of sound and video clips relating to the first historical earthquake in Australia. Topics include engineering, seismology, emergency response, renewal of the city of Newcastle, insurance reports and studies, as well as psychological, social, and economic impacts on the community.

Effective Disaster Recovery Techniques. *Order #PB.E24A. 1998. VHS (four tapes) and 23-page booklet. $49.00, plus $8.00 shipping, members; $75.00, plus $9.00 shipping, nonmembers. To order, contact the American Public Works Association, 2345 Grand Boulevard, Suite 500, Kansas City, MO 64108-2641; (816) 472-6100; fax: (816) 472-1610; e-mail: catalog@apwa.net; WWW: http://www.apwa.net/catalog.*

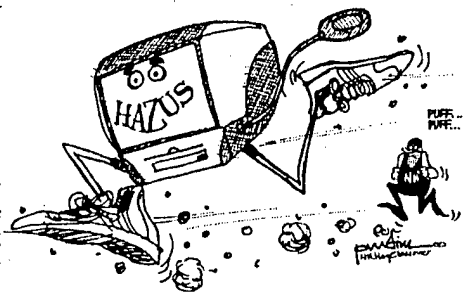
During disasters, local public works organizations have many responsibilities, such as responding to gas leaks, ensuring roadways are cleared, and keeping drinking water clean. These four videos, based on the four phases of emergency management—mitigation, preparedness, response, and recovery—highlight the Federal Emergency Management Agency's Project Impact, which works to build disaster resistant communities; discuss preparing for and recovering from floods and El Niño related hazards, provide insight into cyber/computer threats to infrastructure; and explain critical incident stress management. The booklet describes the types of emergency assistance provided by the U.S. Army Corps of Engineers, the federal Infrastructure Protection Task Force, and the Corps' role in the Federal Response Plan.

New High-Speed HAZUS Released

Immediately following an earthquake, individuals and organizations involved in earthquake preparedness, planning, and response will now be able to save valuable time when assessing damage, thanks to work just completed for the Federal Emergency Management Agency (FEMA) by the National Institute of Building Sciences (NIBS).

HAZUS (short for "Hazards U.S.") is a state-of-the-art computer program developed by NIBS to provide loss estimations following earthquakes. It is nationally applicable, standardized, and can be used at the community or regional level. HAZUS is designed to aid not only response and recovery but also preparedness and mitigation through the creation of earthquake scenarios.

Under a cooperative agreement with FEMA, NIBS has significantly upgraded the program; it is now faster and can provide more detailed information just minutes following a quake. The new edition—HAZUS99—is available from FEMA and NIBS and is free to all federal, state, and local agencies and other public and private organizations involved in earthquake planning and response. The program is available on CD-ROM in three editions: Eastern U.S., Central U.S., and Western U.S. Each CD includes a tutorial and an "Inventory Collection Tool." The program is being developed to work with either MapInfo or ArcView geographic information system software.



FEMA is currently expanding HAZUS by developing loss estimation models for flood and hurricane hazards, and preview versions of these models are being prepared for release in 2002. CD-ROMs containing data for earthquake, wind, and flood exposure analysis are also being prepared for each state.

For more information about HAZUS99, contact *Claire Drury, FEMA HAZUS Project Manager, FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-2884; e-mail: claire.drury@fema.gov* or *Philip Schneider, NIBS Multihazard Loss Estimation Program, NIBS, 1090 Vermont Avenue, N.W., Suite 700, Washington, DC 20005-4905; (202) 289-7800; fax: (202) 289-1092; e-mail: pschneider@nibs.org; WWW: http://www.nibs.org.*

THE HAZARDS CENTER

The NATURAL HAZARDS RESEARCH AND APPLICATIONS INFORMATION CENTER was founded to strengthen communication among researchers and the individuals and organizations concerned with mitigating natural disasters. The center is funded by the National Science Foundation, Federal Emergency Management Agency, National Weather Service, U.S. Geological Survey, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Department of Transportation, National Aeronautics and Space Administration, the Institute for Business and Home Safety, and the Public Entity Risk Institute. Please send information of potential interest to the center or the readers of this newsletter to the address below. The deadline for the next ***Observer*** is *March 17, 2000.*

Center phone number . . . . . (303) 492-6818
Fax . . . . . (303) 492-2151
E-mail . . . . . hazctr@spot.colorado.edu
Publications Clerk . . . . . (303) 492-6819
E-mail . . . . . janet.kroeckel@colorado.edu

STAFF

NATURAL HAZARDS OBSERVER

ISSN 0737-5425
Printed in the USA.
Published bimonthly. Reproduction with acknowledgment is permitted and encouraged.

The ***Observer*** is free to subscribers within the U.S. Subscriptions beyond the U.S. cost $15.00 per year. Back issues of the ***Observer*** are available for $2.00 each, plus shipping and handling. Orders must be prepaid. Checks should be payable to the University of Colorado.

Copies of the ***Observer*** and the Hazards Center's e-mail newsletter, ***Disaster Research***, are also available from the Natural Hazards Center's World Wide Web site:

http://www.colorado.edu/hazards

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